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ARCANA ENTOMOLOGICA;

OR

Illustrations

OF

NEW, RARE, AND INTERESTING

INSECTS.

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BY J. O. WESTWOOD, F.L.S.,

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IN TWO VOLUMES.

VOL. I.

"————These waved their limber fans
For wings and smallest lineaments exact,
In all the liveries decked of summer's pride,
With spots of gold and purple, azure and green."—MILTON.

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Systematic Arrangement

OF THE

ILLUSTRATIONS CONTAINED IN THE PRESENT VOLUME.

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ARCANA ENTOMOLOGICA.

PLATE I.

DESCRIPTIONS OF SOME ASIATIC CORNUTED SPECIES OF CETONIIDÆ.

No group of insects has attracted so much observation as the large species of Cetoniidæ, in which the head of males is armed with horns, and which compose the genus Goliathus * of Lamarck, their extreme variety and singular formation having rendered them objects of attention. In its original condition, as established by Lamarck, this genus was characterised chiefly by the circumstance that the head was armed with horns. A stricter analysis of the family to which the genus belongs, however, appears to prove that many of the species which had been thus associated together belong to distinct groups, whilst the species which still constitute the group have been distributed into various sub-genera. We accordingly find that Gory and Perchéron, in their "Monographie des Cétoines," have separated Goliathus rhinophyllus of Weidemann (placing it in the genus Macronata); they have also adopted the genus Ynca for the Brazilian species, as proposed in the Encyclopédie Méthodique. All the other species peculiar to the Old World (including also G. Hoepfneri, Desj., an American insect) remain together under the generic name of Goliathus. Mr. Hope, however, in the first part of his Coleopterist's Manual, relying chiefly on the form of the prothorax and toothing of the legs, has separated G. Polyphemus under the name of Mecynorhina †, G. micans under that of Dicro-

* Dr. Thaddeus W. Harris, one of the most acute American Entomologists, in some recent "Remarks upon Scarabæus Goliatus and other African Beetles allied to it," published in the 1st Volume of the Journal of the Essex county (U. S.) Natural History Society, proposes the name of Hegemon in lieu of Goliathus for this genus, in order to restore to the typical species its true specific name of Goliatus.

† The second species of this genus, stated by Mr. Hope to be in the possession of Mr. Joseph Hooker, is the male of G. torquatus, of which species Mr. Hope has recently received a specimen from Mr. Strahan, who also possesses a fine male, which has been described and figured by Mr. Waterhouse, in the Magazine of Natural History.

norhina, G. Heros, &c. under that of Rhomborhina, and G. Hoepfneri as an unnamed new genus. The same author, in a previous work, had proposed the genus Dicranocephalus for the G. Wallichii, whilst Mr. W. W. Saunders described another remarkable Indian form under the name of Jumnos Ruckeri, in the Transactions of the Entomological Society of London, and M. Dupont two other Indian species under the generic name of Narycius.

Still more recently, Mr. W. S. Mac Leay, in his memoir on the Cetoniidæ, published in Dr. A. Smith's work on African Zoology, has given the G. Rhynophyllus as a new sub-genus (Philistina) of the genus Gymnetinus (Gymnetis). Narycius olivaceus, Dup.; G. Hardwickii, Gory; G. opalinus, Gory (Trigonophorus op., Hope[olim]), and Jumnos Ruckeri are given as separate sections of Coryphe; whilst G. torquatus, G. Polyphemus, G. micans, G. Smithii, G. 4-maculatus, G. Hoepfneri, G. Drurii, G. Inca, G. Wallichii, and Narycius opalus of Dupont, are given as the respective types of so many distinct sections of Goliathus, to one of which, typified by G. Smithii, Mr. A. White has applied the name of Eudacilla, adding a new species named E. Morgani. Two species of Goliathus, from Madagascar, are also described by Messrs. Gory and Perchéron in the 15th number of Silbermann's Revue Entomologique, and a fine new species from the Neilgherries (forming a distinct section), by M. Guérin Meneville, in the Revue Zoologique, 1839, p. 230.

Such is a sketch of the chief modifications which have been made by recent authors in the genus Goliathus, and which I have introduced into this place, not only in illustration of the insects figured in the accompanying plate, but also because it will be further requisite on a future occasion to refer to it.

The Goliathus rhinophyllus of Wiedemann (Zool. Mag. vol. 2, p. 82) *, is an insect of great rarity, found in the interior of Java, which Latreille first asserted to possess "tous les caractères essentiels des Cétoines," except that the prothorax is more rounded and narrowed behind. Messrs. Gory and Perchéron, therefore, detached it, as already mentioned, from Goliathus, and gave it as a Macronata (Monogr. d. Cétoines, pl. 62, fig. 5.). Their figure of this insect is, however, so slightly recognizable that I have not hesitated in refiguring it (pl. 1, fig. 3), adding, also, figures of the essential parts of the mouth, with the view to enable us to judge of the true relations of the species. Mr. Mac Leay, who divides the great family Cetoniidæ into five genera, places this insect in his

* "Cupreus, clypeo cornu erecto, apice dilatato emarginato, thorace cornu declinato."

fourth genus Gymnetinus [Gymnetis], which he distinguishes from his genus Cetoninus, merely by having the middle of the thorax produced behind into a lobe that conceals the scutellum in a greater or less degree. This, however, appears to me to be far too trivial a character to separate species which agree in other important respects, especially as we find that the form of the hind margin of the thorax is liable to several variations even in Goliathus, sub-generically restricted as it is by Mr. Mac Leay, The characters which Mr. Mac Leay gives of the sub-genus which he forms for this insect, namely, "Maxillæ armed with corneous teeth, scutellum distinct, male clypeus porrect and bifid at the apex, female clypeus quadrate, entire," are in effect as applicable to Goliathus as they are to Philistina, the sub-generic name given by Mr. Mac Leay to this species, but which must be changed, in favour of that of Mycteristes of Laporte—Hist. Nat. An. Art. vol. 2. p. 162.

It is further requisite to observe that my dissections have been made with the greatest care, inasmuch as they materially differ from Mr. Mac Leay's description. This gentleman observes, that this group differs from Goliathus, which he places in his genus Cetoninus, "in the long corneous part of the mandibles, in the maxillæ being armed with corneous teeth, in the mentum being very slightly emarginate" (p. 25), in the thorax being cornuted (p. 31), and other particulars. In the specimen of G. rhinophyllus which I dissected however, I found the lanceolate part of the mandibles (fig. 3 a) not more than one-fourth longer, instead of being "twice as long as the square membranaceous part." The maxillæ (fig. 3 b) are rather long and slender, instead of being short and prismatic, the apical lobe being armed with at least five teeth. Moreover this character of the toothing of the maxillæ, which is so rare amongst the Cetoniidæ, exists in a remarkable degree in the typical Goliathi, as I discovered in making the dissections for Mr. Hope's Coleopterist's Manual, but not in Macronata, nor Gymnetis. Mr. Mac Leay further describes the mentum as "quadrate, truncated in front, and very little emarginate," a description which ill accords with my figure 3 c. The mesosternum (fig. 3 d), as Mr. Mac Leay says, is not produced, that is porrected anteriorly, but it is produced downwards, extending lower than the front of the metasternum.

The specimen figured in the plate enriches the collection of the Rev. F. W. Hope, and is a male. The female differs in having the front of the head square and unarmed; the front of the thorax is

also unarmed, and the anterior tarsi are much shorter than in the male *; the anterior tibiæ are externally tridentate, as in the opposite sex.

As M. rhinophyllus is the only species hitherto described belonging to the group Mycteristes, I consider myself very fortunate in being enabled, by the kindness of H. Cuming, Esq., to commence the present work with a description and figures of both sexes of a new species brought by him from the Philippine Islands. A pair only of this beautiful species were taken, and they are destined for the cabinet of the British Museum. From rhinophyllus, however, they differ in several respects. The body in the male (fig. 1 and 1 a) is shorter, broader at the base of the elytra, which are more flattened and triangular behind, and destitute of the scales which ornament rhinophyllus; the thorax is exceedingly brilliant and polished, and the horn at its fore part is much deflexed and strongly notched at the tip, with a tubercle within; the horn of the clypeus is also furnished with a tubercle in front. The female (fig. 2) is smaller, and has the head and thorax unarmed, the elytra flatter, and not so triangular. The mesosternum (fig. 1 f) is slightly porrected in front, and does not extend lower than the front of the metasternum. The parts of the mouth (fig. 1 b, mandible of the female, 1 c, maxilla, 1 d, instrumenta labialia of the male, 1 e, ditto of the female) scarcely differ from those of rhinophyllus; the horny, lanceolate part of the mandibles is, however, shorter; there appears to me no difference between the palpi of the two sexes. The legs of the male are larger than those of the female, but the anterior pair are not so long as in rhinophyllus, and the fore tarsi are not so long as the tibiæ. All the tibiæ in the male are clothed for about half their apical portion on the inside with fine hairs. They are all unarmed with teeth; a very slight angular prominence on the outside of the four posterior tibiæ obscurely indicates the place of the ordinary teeth. The ungues are particularly large, and between them at the base is a very small plantula, with two very short pseudonychiæ. The anterior tibiæ of the female are armed with three teeth, and the four posterior with one on the middle, and two at the tip, with two calcaria.

As it has been thought convenient to name the divisions of Goliathus proper, which differ in the toothing of the fore legs, the present insect may be regarded as a division of Mycteristes, and I am indebted to my friend G. R. Waterhouse, Esq., who first

* In both figures 3 and 4 the fore tarsi are represented scarcely long enough.

directed my attention to this interesting novelty, for the following description and name :—

MYCTERISTES (PHAEDIMUS) CUMINGII.

M. viridis, nitore resplendens, elytris pedibus et corpore subtus flavescente lavatis, corpore subtus paullo pubescente; capite cornu erectum exhibente (hoc quoad caput longitudinem æquante) ad apicem latum et paullo emarginatum, postice concavum, antice tuberculo uno obsitum; thoracæ convexo postice augustiore quam ad mediam, marginibus lateralibus pone mediam fere rectis, antice constricto, margine posteriore in medio paullo producto, antice porrecto in cornu validum ad apicem bifidum super caput impendente; scutello mediocri triangulari, elytris longioribus quam latis, postice attenuatis, disco plano, apice subtruncato; pedibus validis, tibiis scopula pilorum subtus instructis et externe haud denticulatis, tarsis quam tibiæ paullo brevioribus, unguibus permagnis. ♂ Long. corp. lin 12½. Differt fœmina corpore minore capite thoraceque haud cornutis, pedibus mediocribus, tibiis anticis externe tridentatis, reliquis denticulo externo parvo infra medium instructis, unguibus mediocribus. Elytra in fœmina quasi flavescentia aureo-viridi lavata apparent, sutura et linea longitudinali prope marginem intense viridibus.

In the two species above described, the middle of the front of the head is produced into a single upright horn; but in the two other species figured in plate 1, each side of the clypeus, or front of the head, is produced into a horn, giving the insects a greater resemblance to certain cornuted quadrupeds.

Dicranocephalus Wallichii (fig. 4) is an exceedingly rare insect, first brought to Europe from Nepaul by the late Major-General Hardwicke, and shortly characterised by the Rev. F. W. Hope in Gray's Zoological Miscellany (1831, p. 24). The male is well figured in Gory and Perchéron's Monographie des Cétoines, tab. 26, fig. 1, under the name of Goliathus Wellech. The specimen, however, which they figure, has the horns of the head of small size; whilst in those of the fine specimen represented in my plate (preserved in the Cabinet of the British Museum), they are very greatly elongated and recurved *. The parts of the mouth are represented in figures 4 a (one of the mandibles), 4 b (one of the maxillæ), 4 c (instrumenta labialia), and 4 d (labrum). The mesosternum (fig. 4 e) is prominent but deflexed, extending lower than the front part of the metasternum.

The female has the fore tibiæ spined, as in the male; and the head, instead of being cornuted, has each of the front angles produced into a tooth.

The outline, fig. 5, represents the *Narycius opalus* of Dupont, a species from Madras, of which I believe no specimen exists in this country; figured in Guérin's Magazin de Zoologie, Insectes, pl. 128:

* This specimen affords another instance of the great development of the horns in certain individuals of cornuted species, which are almost invariably (as in this instance) of larger size than the ordinary individuals.

it is of a golden green colour, the thorax being coppery green. Mr. MacLeay forms it and Dicranocephalus Wallichii into sub-sections, but I have no doubt that when its female is known, and the structure of the mouth investigated, each will be found to form a section of equal rank with the gigantic and Smithian Goliaths; the metallic colour, size of the fore feet, form of the horns of the head, bidentate anterior tibiæ, and especially the very prominent *porrected* mesosternum of N. opalus, being its distinguishing external peculiarities. In this case, it will be proper to restore to this insect the name of Narycius, which Mr. MacLeay has applied to a section of Coryphe, containing, as he supposes, Dupont's second species N. olivaceus.

With the view of facilitating the consideration of the preceding remarks, as well as other future ones, upon the relations of the Goliath-beetles, a sketch of the distribution of the Cetoniidæ, given by Mr. Mac Leay in the work above referred to, will be a useful supplement to the present memoir. It will be scarcely needful to add that the quinarian distribution and parallelism, or analogy of groups, form the principal peculiarities of Mr. Mac Leay's arrangement. The family Cetoniidæ is therefore divided into five genera, each of which contains five sub-genera, which analogically represent each other, thus:—

Gen. I. Trichinus.	II. Cetoninus.	III. Gymnetinus.	IV. Macrominus.	V. Cryptodinus.
Sub-Gen. 1. *Osmoderma*	*Schizorhina* . .	*Lomaptera* . . .	*Oplostomus* . .	*Genuchus.*
2. Valgus . .	Coryphe	Agestrata	Anoplocheilus .	Cyclidius.
3. *Trichius* .	*Goliathus* . . .	*Philistina* . . .	*Diplognatha* . .	*Cremastocheilus.*
4. Campulipus	Ischnostoma . .	Macronata . . .	Gnathocera . . .	Cryptodus.
5. Platygenia.	Cetonia	Gymnetis	Macroma	Cymophorus.

(The Genera printed in italics are those by which the passage is made from one Genus to another.)

Goliathus, the third sub-genus of the genus Cetoninus, is arranged in the following manner:—

Sect. I. Smithii, M'L.
- Sub-Sect. 1. . . . . G. torquatus.
- — 2. (Mecynorhina, Hope) . . . G. Polyphemus. .
- — 3. (Dicronorhina, Hope) . . G. micans and G. splendens.*
- — 4. (Eudocilla, White) G. Smithii, Grallii, Daphnis, [and Morgani.]
- — 5. . . . . G. 4-maculatus.

Sect. 2. Höpfneri, M'L. . . . . G. Höpfneri.

Sect. 3. Gigantei, M'L. . . . . G. Drurii, giganteus, regius, cacicus, and princeps.

Sect. 4. Inca, Lep. and Serv. . . 1. Ynca, and four other South American species.

Sect. 5. Dicronocephali [Dicranocephalus, Hope]
- Sub-Sect. 1. Unknown.
- — 2. [Dicranocephalus proper] . . G. Wallichii.
- — 3. Unknown.
- — 4. Unknown.
- — 5. [Narycius, typ. verus] . . . G. opalus, Dup.

The angular leafless plant figured is the Æginetia Indica.

* Mr. Strahan's specimen from Sierra Leone, mentioned by Mr. Mac Leay as another species of this section, is certainly nothing else than G. micans.

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PLATE II.

DESCRIPTIONS OF VARIOUS SPECIES OF THE HETEROPTEROUS GENUS PHYLLOMORPHA.

When Sparrman first published his account * of the Cimex paradoxus, a lively degree of interest was excited by his description of the singular creature, which at once found its way into all the popular treatises upon natural history. His paper (Swedish Transactions, 1777) was illustrated by three figures of the insect of the natural size (one seen from above, copied in my plate 2, fig. 1*, and the other two profiles). He likewise mentions, that the insect was captured at a considerable distance ("250 timars reise") from Cape Town. About ten years afterwards Stoll figured an insect from the Cape of Good Hope, which, judging from its natural size, and the nearly equal size of the fourth and fifth lobes of the abdomen, is evidently identical with Sparrman's. As other species were discovered, they were, however, referred at once to the Cimex paradoxus. Thus Wolff, Dumeril, and Duncan (Introd. to Ent. in Nat. Library pl. 20, fig. 1), have figured a European species under that name; whilst, still more recently, a smaller species, brought by M. Verreaux from the Cape of Good Hope, has been described under the same name. As I possess a specimen of the latter insect, from M. Verreaux, and as there is a specimen of Sparrman's insect in the British Museum, and which agrees in size &c. with Sparrman's figures, I am happy in being enabled to exhibit the differences between the two South African species.

Phyllomorpha, *Lap.* (Syromastes p. *Latr.*)

Section I.—Prothorax with its posterior margin not produced into two long lobes, nor prolonged over the base of the Hemelytra.

Species I.—*Ph. paradoxa*, Plate 2, fig. 1 and 1*. Lutea, fusco et sanguineo varia, prothoracis laciniis antice porrectis abdominis laciniis 4 et 5 fere æqualibus, his ad apicem vix emarginatis. Long. corp. lin. 5¾.

* Sparrman relates that when at the Cape, he observed this insect at noontide as he sought for shelter among the branches of a shrub from the intolerable heat of the sun. Though the air was extremely still and calm, so as hardly to have shaken an aspen leaf, yet he thought he saw a little withered, pale, crumpled leaf, eaten as it were by caterpillars, fluttering from the tree. This appeared to him so very extraordinary, that he thought it worth his while suddenly to quit his verdant bower in order to contemplate it; and he could scarcely believe his eyes when he saw a live insect, in shape and colour resembling the fragment of a withered leaf, with the edges turned up, and eaten away as it were by caterpillars, and at the same time beset all over with prickles creeping on the ground.

Syn.—Cimex paradoxus, *Sparrman*, (*Stoll.* Punaises, fig. 101 ?) nec *Guérin*, *Dumeril*, *Duncan*.
Habitat in Africa australi. Mus. Brit. (D. Smith).

Obs.—Dr. Smith's specimen was taken at a considerable distance from Cape Town, inland. Fig. 1* is copied from Sparrman's original figure.

Species II.—*Ph. Capicola*, W., Plate 2, fig. 2, and 2*. Lutea, laciniis prothoracis et abdominalibus 4ti paris brunneo et sanguineo variis, duabus sequentibus albidis apice obscurioribus minoribus et ad apicem acute emarginatis. Long. corp. lin. 4.
Syn.—Ph. paradoxa, *Guérin*, Revue Zool. 1839, p. 232; Dict. Pitt. d'Hist. Nat., pl. 673, fig. 5. (*Burmeister*, Handb. d. Ent. 2, p. 310 ?)
Habitat apud Caput Bonæ Spei. D. Verreaux. Mus. Hope. nostr.

Species III.—*Ph. Latreillii*, Plate 2, fig. 3. Albida, fusco-venosa, breviter spinosa, laciniarum angulis anticis obscurioribus, laciniis maximis, abdominalibus figuram oblongo-transversam efficientibus; antennarum articulo 2do, 3tio fere dimidio breviore. Long. corp. lin. 4½.
Syn.—Coreus (Syromastes) phyllomorphus, *Latreille*, R. An. 2nd edit. t. 3, p. 438, pl. 19, fig. 3: Phyllomorpha Latreillii, *Guérin*, Dict. Pittor. d'Hist. Nat., pl. 673, fig. 6; Rev. Zool. 1839, p. 233: Syromastes hystrix, *Burm.*, Handb. d. Ent. 2, p. 310 (nec hystrix, *Latreille*).
Habitat apud Senegalliam. Mus. nostr.

I am indebted to Messrs. Audouin and Guérin Meneville (by the latter of whom they were also supplied to Latreille) for my specimens of this species, which are, I believe, the only ones in this country. The latter author describes the species (loc. cit.) as being 11 millemètres, or rather more than 5½ lines long; which is considerably larger than my specimens, although agreeing in all other respects.

Species IV.—*Ph. Persica*, W., Plate 2, fig. 4. Pallide albida, longe spinosissima, laciniis conicis, apice obtusis antennarum articulo 3tio 2do fere duplo longiori. Long. corp. lin. 5.
Habitat in Persia, prope oppidum "Teheran" dictum.

Obs.—I am indebted to M. V. Audouin for my specimen of this new species (which is I believe the only one in this country). The species is also undescribed by Burmeister, Guérin, or any recent hemipterologists. It was collected near Teheran most probably by Olivier.

Section II.—Prothorax with its posterior margin produced into two long lobes extending over the base of the Hemelytra.

Species V.—*Ph. laciniata*, Vill., Brullé, Burm., Guér.; *Cor. hystrix*, Latr., nec Burm.; *Cim. paradoxus*, Wolff, Dumer, Duncan, H. Schaff.

Species VI.—*Ph. lacerata*, H. Schaff. Nom. Ent. p. 41. (Piedmont.)

Species VII.—*Ph. Algirica*, Guér. Dict. Pitt. d'H. N.; Rev. Zool., 1839, p. 232.

Species VIII.—Unnamed. (Erichson, Wiegm. Arch. 1840, vol. 2, p. 317. Balkan mountains.) The plant figured from the Cape of Good Hope is the Lobelia gracilis.

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PLATE III.

THE TRANSFORMATIONS OF PAPILIO HECTOR ILLUSTRATED.

The genus Papilio, even in its most restricted modern state, comprises a very numerous assemblage of species—nearly 250 being known—differing greatly, not only in the imago, but also in the preparatory states. The larvæ of many Indian species have the body smooth, with the two segments succeeding the head slender and retractile beneath the third segment, which is dilated and ocellated; thus resembling the caterpillars of some of the Sphingidæ, (P. Memnon, Arjuna, Cresphontes, Polites, and Pammon). The larvæ of others have the tail bifid (P. Agamemnon, Pompilius, as well as P. Demoleus, according to Fabricius). Others again have the body armed with fleshy tubercles, as in P. Polydorus and Hector, and P. (Ornithopterus) Amphrisius; whilst in P. dissimilis, these warts are replaced by recurved spines *. The chrysalides of the tuberculated larvæ are remarkable for having the abdominal part of the body much curved, and armed with several strong dorsal prominences.

Our knowledge of the transformations of the Indian Lepidoptera is almost exclusively derived from the researches of Dr. Horsfield in Java, and Major-General Hardwicke in India. The former of these authors has represented the larva and pupa of P. Polydorus in his Lepidoptera Javanica; and the similarity of the preparatory states of P. Hector with that species is mentioned by Boisduval and De Haan. The figures illustrating the latter species (contained amongst Major-General Hardwicke's Zoological drawings in the library of the Linnæan Society) have not, however, been published †; and as it is essential in determining the relations of the species of this intricate genus that every fact should be brought under notice, I have thought it not unnecessary to publish a copy of

* Mr. Swainson has refigured as the larva of Papilio Protesilaus, Linn., the caterpillar of one of the Nymphalidæ from Madame Merian, who gave it as the preparatory state of that Papilio, adding however, that the chrysalis is suspended by the tail; which is the case with no species of Papilionidæ, and ought to have induced Mr. Swainson to hesitate in adopting it, as he has done, as an illustration of the merits of his "*Natural System.*"

† It is proper to observe, that Boisduval states that "La chenille est figurée par Espor, mais probablement si inexactement que nous n'osons pas la décrire d'après cet auteur," Hist. Nat. Lépid. i., p. 270.

the figures of the preparatory states, adding an original figure of the perfect state of this Indian butterfly.

Fig. 1, Papilio Hector, *Linnæus*, Syst. Nat. 2, p. 745; *Cramer*, pl. 143, fig. A; *Clerck*, Icones, tab. 33, fig. 1, 2; *Sulzer*, Gesch., pl. 12, fig. 1.

The plant figured, upon which the larva feeds, is the Aristolochia Indica.

The chrysalis differs from that of P. Polydorus, figured by Dr. Horsfield, in having the dorsal protuberances much smaller.

M. De Haan, in his elaborate memoir on the Papilionidæ of the Dutch-Indian Settlements, just published, has given Papilio Mutius as the female of this species.

Fig. 2. Caterpillar of P. Hector. Fig. 3. Chrysalis—ventral aspect. Fig. 4. Chrysalis—dorsal aspect.

Emongst the leaves she made a butterfly,
With excellent device and wondrous slight,
Fluttering among the olives wantonly,
That seem'd to live, so like it was in sight—
The velvet nap which on his wings doth lie,
The silken down with which his back is dight;
His broad outstretchèd horns, his airy thighs,
His glorious colours, and his glistening eyes.

His head two deadly weapons fixèd bore,
Strongly out-lancèd towards either side,
Like two sharp spears, his enemies to gore:
Like as a warlike brigandine applide
To fight, lays forth her threatful pikes afore
The engines which in them sad death do hide;
So did this fly outstretch his fearful horns,
Yet so as him their terrour more adorns.

What more felicity can fall to creature
Than to enjoy delight with liberty;
And to be lord of all the works of Nature,
To reign in th' air from earth to highest sky;
* * * *
To take whatever thing doth please the eye!
Who rests not pleasèd with such happiness,
Well worthy he to taste of wretchedness. (Spenser.)

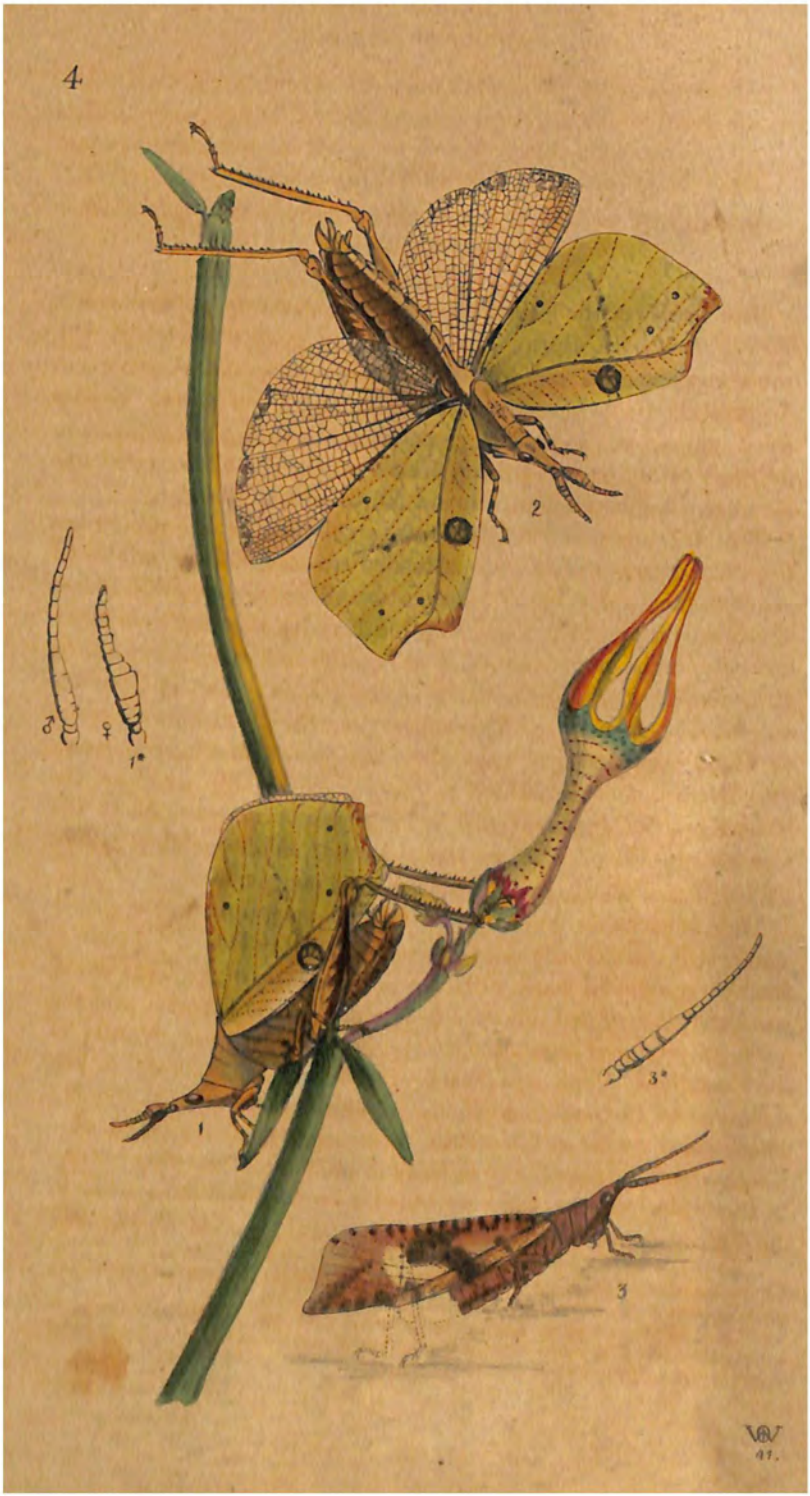
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PLATE IV.

DESCRIPTION OF A NEW GENUS BELONGING TO THE FAMILY OF THE LOCUSTS.

The family of the locusts, Locustidæ, Leach; (*Acridites*, Latr., Serv.; *Acridiodea*, Burm.;) is one of very great extent, and contains many species remarkable for their extraordinary powers of devastation, (it being now ascertained that other species besides the L. migratoria migrate in vast swarms, spreading alarm throughout their route,) as well as many others, which, from their remarkable forms and brilliant colours, do not fail to attract attention.

The distribution of the family into sub-families and genera has been but comparatively little attended to; and it is greatly to be regretted that the works of Burmeister and Serville appeared almost simultaneously, so that a considerable diversity exists between them, not only in the nomenclature of the genera and species, but also in their classification and the limits of the genera. Two of Serville's sub-families, namely, the Truxalides * and the Conophori †, appear to blend together very naturally: the genus Pœkilocera, Serv., (Pœcilocera, Burm.,) which is placed by Serville amongst the Truxalides, being considered by Burmeister as referable to the Conophori; indeed, the last-named author unites Serville's genera Pœkilocera, Petasia, and Phymatea, into one genus.

The remarkable insects here figured constitute a new genus, which still more closely unites these two sub-families. We have in fact the pyramidal head, with the oblique face, of the Truxalides, and the flattened and dilated basal joints of the antennæ, and the forehead produced into an obtuse point between the antennæ, of the Conophori. The remarkable distinction which exists in the structure of the antennæ of the opposite sexes is a peculiarity which exists, as far as I recollect, in no other species of this family. Another striking peculiarity consists in the form of the wing-covers. In the typical species, these represent a broad, fresh leaf; while in the Chinese species, they are narrower, and resemble a withered

* Distinguished by having the head pyramidal in front, with the face more or less oblique and the antennæ often ensiform, with prismatic joints.

† Distinguished by having the face vertical, the antennæ but rarely ensiform, with the joints distinct; the forehead produced between the antennæ in a thick joint, with a deep groove beneath to receive the base of each of the antennæ.

leaf. No other instance of this kind of analogy occurs to my recollection amongst the Locustidæ, although it is of constant occurrence amongst the grasshoppers with long antennæ.

From the very compressed form of the body (another remarkable character) the genus may be named

SYSTELLA, W.

Corpus compressissimum. Caput ante oculos et inter antennàs productum, facie valde obliqua convexa integra sc. haud carinata. Clypeus distinctus. Labrum antice in medio fissum. Palpi breves filiformes, labiales minores. Antennæ secundum sexum formæ variæ; in fossula tuberculi frontalis utrinque insertæ, articulis 2bus basalibus distinctis, sequentibus 4 aut 5 arcte coalitis, deplanatis margine interno crassiori, externo acuto, in ♀ multo latioribus; articulis reliquis distinctis gracilioribus (in ♂ multo longioribus), apicali attenuato. Prothorax compressus, dorso plano integro, lateribus angulatis. Prosternum tuberculo acuto armatum. Abdomen compressum alis brevius, segmento ultimo ventrali in ♂ maximo inflato. Pedes 4 antici breves, 2 postici saltatorii; tibiis serie duplici spinarum æqualium extus armatis; tarsi 3-articulati unguibus acutis, pulvillo magno. Tegmina magna foliiformia, supra dorsum horizontaliter elevata, angulo externo antico emarginato.

This genus appears to me, from the structure of its antennæ, to be most nearly allied to Akicera and Porthetis, Serville, (Pamphagus, Burm.,) and to Xiphicera. From these, however, as well as all the other genera of the family, it is separated by the peculiar characters above noticed.

Species I.—*Systella Rafflesii*, W. *Luteo-viridis, tegminibus viridibus latissimis, ocello magno fusco in area costali notatis.* Long. corp. ♂ lin. 13½, ♀ 18. Expans. tegmin. lin. 34½.

Antennæ 15-articulatæ in ♂, 14 in ♀; articulis 3—7 in ♂, 3—6 in ♀, coalitis dilatatis subprismaticis, in ♀ multo latioribus, 8 reliquis in ♂ fere equalibus et filiformibus, in ♀ vero articulis 7 et 8 sensim angustatis, reliquis 6 distinctis irregularibus. Vena postcostalis tegminum ramos 5 simplices punctatos emittit; vena mediana duos tantum. Apex marginis costalis in ♀ valde, in ♂ parum, emarginatus. Tibiæ 4anticæ fusco-annulatæ.

A single female specimen of this species is in the collection of the Zoological Society, and was presented by Sir Stamford Raffles, by whom it was most probably collected in Sumatra. I also detected a male in the collection formed by H. Cuming, Esq., in the Philippine Islands, and destined for the British Museum.

Species II.—*Systella Hopei*, W. *Fusca, tegminibus fusco luteo albidoque variis, angustioribus; emarginatura apicali marginis antici vix conspicua.* Expans. tegmin. lin. 35.

Præcedenti multo tenuior, fusca, dorso prothoracis et capitis scabro, linea tenui fulva inter oculos; antennæ (♂?) 17-articulatæ, articulis 11 ultimis distinctis longitudine decrescentibus, luteis. Tegmina luteo-fusca nubila magna media (albido posticè cincta) ad costam angustata maculisque quadratis minoribus marginis postici fuscis, venis punctatis punctisque nonnullis majoribus inter venas. Abdomen et pedes postici mutilati.

This species is unique in the collection of the Rev. F. W. Hope, F. R. S., &c., and is a native of China.

The plant figured is the Indian Ceropegeia Juncea.

ENTOMOLOGICAL INTELLIGENCE, NOTICES OF NEW WORKS, &c.

British Museum.—The situation of the Curator of the entomological department in the British Museum has become vacant by the removal of Mr. Samouelle. It is to be hoped that, for the sake of science, a successor of competent ability will be appointed in his stead. When the state of the entomological collections in this national establishment is taken into consideration, and when it is stated that in the national museums of France, Prussia, Austria, Holland, &c., several persons * (some of them men of renown) are engaged in the entomological department of each, it is not too much to express a hope that the trustees of the British Museum will again endeavour to follow up the recommendations of the parliamentary committee, by "obtaining the whole time and services of the ablest men," as they have already done in the appointment of the present chief superintendant of the entire zoological collections.

Encyclopædias of Natural History.—The French have long taken precedence over us, and indeed all other nations, in the publications of Dictionaries of Natural History. The entomological portion of the great "Encyclopédie Méthodique" is a distinct part of the work, and alone occupies ten quarto volumes; the "Dictionnaire des Sciences Naturelles," of which the portion relative to insects was written by M. Dumeril (and was subsequently republished in his "Considérations Générales"), occupied fifty-six octavo volumes; the entomological articles of the "Dictionnaire d'Histoire Naturelle," in twenty-four octavo volumes, and the "Nouveau Dictionnaire d'Hist. Natur." in thirty-six octavo volumes, were written by Latreille, who also, in conjunction with Messrs. Audouin and Guérin, wrote the entomological articles of the "Dictionnaire Classique d'Hist. Nat.," in seventeen octavo volumes. More recently, M. Guérin has edited a cheap "Dictionnaire Pittoresque d'Hist. Nat." in small folio, extending through several volumes with many plates, which is not yet completed; and a new and more im-

* At the Jardin des Plantes, Messieurs Audouin, Brullé, Blanchard, Lucas, and one or two assistants. At the Berlin Museum, Drs. Klug and Erichson, and two assistants. At Vienna, M. Köllar. At Leyden, M. De Haan.

portant "Dictionnaire Universel d'Histoire Naturelle," edited by M. D'Orbigny, assisted in the articulated portion by Messieurs Audouin, Blanchard, Brullé, Doyère, Desjardins, Duponchel, Lucas, and Milne Edwards.

The natural history portion of the Cabinet Cyclopædia was chiefly written by Mr. Swainson, with the view of developing his peculiar views of classification, and in which there is no attempt at alphabetical arrangement; the British Cyclopædia of Natural History, in three large octavo volumes, is therefore the only dictionary we yet possess upon general natural history. This work, of which the entomological articles, commencing with the word Aphodiidæ, were written by me, was intended to take a generalised view of the operations of nature rather than to afford minute and technical details. The families, therefore, and chief genera were alone treated upon, such of the latter as afforded no materials beyond structural details being but slightly mentioned, and the sub-genera only named in the family articles. The nomenclaturist and collector have need, however, of more precise details relative to genera, sub-genera, and species; and from the great additions recently made to this branch of the science in numerous works, the labour of research is so much increased as to deter many from describing new objects, under the fear that they may have already been described. The announcement, therefore, of an English Encyclopædia of Natural History, in which every genus and sub-genus, and even synonymical names, are intended to be comprised, will be greeted by English zoologists—although from the great extent to which such a work must run (and it will be worse than useless unless it be carried throughout to this extent), its success as a commercial speculation appears highly doubtful. The public mind in fact has not yet been sufficiently awakened to the advantages and pleasures to be derived from the cultivation of the science of natural history in general; nor can such a result be reasonably expected until natural history be made a branch of general education, as it is in several Continental States.

On the Study of Natural History as a Branch of General Education in Schools and Colleges. By Robert Patterson, Vice-President of the Natural History Society of Belfast.—Belfast, 1840, 8vo, 28 pages.

No stronger proof of the propriety of the views detailed by Mr. Patterson in this pamphlet can be given than in the circumstances stated in the preceding article. When we find, that "in the great

majority of the Continental schools," (as stated by the American Professor, Dr. Bache, who inspected 278 schools in England, Scotland, Ireland, France, Belgium, Holland, Switzerland, and the principal states of Germany,) "Natural History forms a regular part of the course of instruction, and usually occupies from two to four hours in the week," we can at once perceive the reason why our countrymen are so slow in supporting works upon Natural History.

Insects of the Philippine Islands.—The geographical situation of these islands necessarily gives to their zoological productions a peculiarly interesting character, whilst the number of travellers or naturalists who have visited them has been so small that the insects which inhabit them are for the most part unknown. A few indeed were collected by Dr. Meyen, in his voyage round the world, and have been described by Drs. Erichson and Burmeister; (Nova Acta, vol. 16, suppl.); others also were collected by Eschscholtz. A noble collection has, however, recently been formed in those islands, by H. Cuming, Esq., during a visit of several years' duration, made expressly with the view of forming collections of Natural History. Since his return home the collection has been arranged; the most complete series being destined for the British Museum. Another set has been liberally presented to the Entomological Society of London by Mr. Cuming, who proposes to dispose of the duplicates.

Entomological Society of London.—The Journal of the Proceedings of this society, which has hitherto been published with the Transactions (whereby great delay has occurred in the publication of papers containing descriptions of genera and species), has, since the commencement of the present year, been published from time to time in the "Annals of Natural History," and contains, in addition to the accounts of the ordinary business of the meetings, abstracts of the memoirs and short descriptions of the new genera and species described in them.

Silk, a Modification of Caoutchouc.—An acrimonious juice is found in almost all euphorbiaceous plants; yet it is strange, as remarked by Dr. Lindley, that from such plants should be obtained Caoutchouc, a most innocuous substance. But what appears still more remarkable is the fact that silk is not improbably a modification of the Caoutchouc of these plants elaborated by the silk-

worms, which, it has been maintained, feed exclusively on milky-juiced and caoutchouc-yielding plants. Such at least seems to be the legitimate inference from the extensive generalization of Dr. Royle, whose statement is as follows :—" In a paper read to the British Association at Bristol on the plants which yielded caoutchouc, I observed that they all belonged to the milky-juice families of Chicoraceæ, Lobeliaceæ, Apocynaceæ, Asclepiadaceæ, Euphorbiaceæ, and Artocarpeæ, a tribe of Urticaceæ. In the first place, it may be observed that many of the plants of these families are remarkable for the strength and tenacity of the fibre they yield for rope-making; secondly, that bird-lime is prepared from plants belonging to families which yield caoutchouc, as from the Apocyneous Voacanga in Madagascar; and in India, from different species of Ficus and Artocarpus. But the most interesting fact which I obtained from the investigation was one most unexpected and the least connected with the subject. Having been previously employed in considering the proper means for extending the cultivation of silk in India, it struck me as singular that so many of the plants which silk-worms prefer next to the mulberry leaf should be found in those families which yield caoutchouc. Thus, in England, the lettuce and dandelion leaves belonging to Cichoraceæ, and, in India, Ficus religiosa, belonging to Artocarpeæ, have been ascertained to be the best substitutes for the mulberry leaves; while the Arrindi silk-worm of India, Phalæna Cynthia, feeds upon those of the castor-oil plants, Ricinus communis, belonging to Euphorbiaceæ. Considering that a circumstance of this nature was not likely to be accidental, I was induced to think that it depended upon the presence of some principle common to all these vegetables, and therefore that caoutchouc (perhaps in a modified state) might really be contained in the juice of the mulberry, though this is described as not being milky. I, therefore, requested Mr. Sevier, who has made so many discoveries in the properties of caoutchouc, to ascertain whether my conjecture was well founded. In a few days he informed me that the mulberry-tree sap was of a milky nature, and did actually contain caoutchouc, especially on dry and bright sunny days."

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PLATE V.

DESCRIPTIONS OF TWO PAPILIONIFORM MOTHS FROM ASSAM.

INTENDING to illustrate in this work such species of the beautiful genus Papilio (as restricted by modern authors), as have not hitherto been described and figured (of which a considerable number exist in English cabinets), I selected from the collection of R. H. Solly, Esq., formed in Assam by Mr. Griffith, the two insects in the accompanying plate, which, although peculiar in the form of the hind wings, I considered to be new species of that genus. The size of the insects, their general form, and, above all, the distribution of their colours, gave to them so great a similarity to various species of Papilio, that it was not until I examined the arrangement of the veins of the wings, and the structure of the feet, that I perceived that the two insects were, in fact, not only not Papiliones, but even not Diurnal Lepidoptera. The antennæ, unfortunately, are wanting in both the specimens, but the characters noticed above at once prove them to be moths, which have assumed, or to speak more correctly, which exhibit, the general appearance of species of the restricted genus Papilio. These circumstances, united with the impossibility of arranging these insects in any of the already characterised genera with which I am acquainted, render necessary the establishment of a new genus, which may be named, in allusion to the extraordinary incision at the outer angle of the hind wings,

EPICOPEIA W.

Corpus debile, magnitudine minori. Caput parvum, oculi laterales. Palpi minuti, supra haud conspicui, 3-articulati, articulo basali valde squamoso (fig. 2 * palpus tectus et nudus) 3tio ad apicem subnudo. Mandibulæ minutæ distantes; maxillæ nullæ. Alæ magnæ, valde elongatæ, anticæ integræ, posticæ incisuris semicircularibus inter venas, incisura externa et anali (illa præsertim) valde elongatis. Hamus et tendines omnino carent. Area discoidalis alarum anticarum vix pone tertiam partem alæ extendit. Vena mediastina simplex; vena postcostalis ante apicem areæ discoidalis emittit ramum simplicem fere ad apicem costæ extensum; ex apice supero et antico hujus areæ ramum alterum etiam emittit, hic ramus ramulos duos superos ad apicem alæ extensos emittit. Vena ordinaria transversa (aream discoidalem claudens) valde angulata, venasque duas simplices emittit. Vena mediana brevis triramosa. Cellula discoidalis alarum posticarum brevis, vena valde angulata (ramum unicum emittente), postice clausa; vena mediastina simplex, vena postcostalis bifida ramis valde elongatis, externo intra marginem incisionis currente; vena mediana 3-ramosa.

Pedes crassiusculi, longitudine mediocri. Tibiæ anticæ intus spina lata mobili instructæ, apice inermes; tibiæ intermediæ apice bicalcaratæ, posticæ vero, ante apicem, ut et in apice ipso, bicalcaratæ.

The natural relations of this singular genus are by no means easily to be determined. As already stated, the peculiar arrangement of the veins of the wings, and the number of the spurs of the tibiæ, remove it from the Diurnal Lepidoptera, whilst the obsolete structure of the spiral tongue, and the want of a bridle to the wings beneath, are characters which it possesses in common with several moths.

Mr. Edward Doubleday (who has long carefully studied exotic Lepidoptera, and whose opinion I requested as to the group of moths to which it was allied), after noticing its perplexing character, observes "that it seems to partake of the characters of Papilio, Urania, and that group of the Bombyces to which B. Luna* belongs. This last named species has no bridle to the wings, no maxillæ, and there is some resemblance in the neuration of the wings. But I must confess that I see no real connexion between the two insects. My impression is, that it must be nearer the Uraniæ, some of which, in form, nearly resemble it, but all these have maxillæ and the discoidal cell of the posterior wings open, and two pairs of spines, I think, to the posterior tibiæ. The one middle spine to the anterior tibiæ is found in some Uraniæ."

The relationship suggested with B. Luna and its allies appears to me to be only analogical; that with the Uraniæ is certainly stronger; but it appears to me that a much nearer approach is made to Callimorpha and some of the aberrant Arctiidæ, such as Hypercompa Dominula, in the general weakness of structure and splendour of colours. There is also an extensive group of weak-bodied moths, chiefly natives of India, in which we find the elongated fore wings (some having them similarly marked with black lines between the veins), and a nearly similar arrangement of the veins of the wings, such as Gymnautocera papilionaria, Guér., and some splendid species, figured by Mr. Hope in the Linnæan Transactions, from Assam; and even in Ph. Rhodope of Cramer (pectinicornis Fab.), we find an approach made to the peculiar form of the hind wings. The arrangement of the veins of the wings of Agarista also closely resembles that of Epicopeia. It is to be feared, however, that, from our general ignorance of the exotic forms of Nocturnal Lepidoptera, it will be long before we can speak with precision on the relations of such insects as the present.

The following are the specific descriptions of the two insects represented in the accompanying plate.

* Tropæa, Hübner. Actæas, Leach, Zool. Misc. Both these names were, I believe, published in the same year, 1816.

Species I. *Epicopeia Polydora* (Plate 5, fig. 1). E. alis anticis luteo-griseis nigro-lineatis, posticis nigris, fascia media alba maculisque cuneatis submarginalibus rufis in medio nigris. Expans. alarum unc. 5.

Habitat in agris Assamensibus. In Mus. D. Solly.

Alæ anticæ elongato-triangulares, supra et subtus luteo-griseæ, venis lineisque tenuibus inter venas nigris. Posticæ basi concolores, dimidioque apicali nigræ, fascia media irregulari e maculis sex albis, quarum mediæ majores, macula transversa ad angulum analem, alteris 4 triangularibus (medio nigris), aliisque ad angulum apicalem ovali, sanguineis supra nigro-irroratis, subtus vero pallidioribus; venis etiam fasciam albam dividentibus, subtus sanguineo-irroratis. Corpus nigrum, capite, collo tenui, coxis, lateribus apicesque segmentorum abdominalium subtus sanguineis.

Species II. *Epicopeia Philenora* (Plate 5, fig. 2). E. alis anticis griseis nigro-lineatis, subtus ad costam macula sanguinea, posticis nigris chalybeo nitidis, subtus macula parva versus angulum externum lineaque tenui brevi ad angulum analem sanguineis. Expans. alar. unc. 4½.

Habitat cum præcedenti. In Mus. D. Solly.

Alæ anticæ elongatæ, multo angustiores, grisco-nigricantes basi nigræ, venis lineisque inter venas nigris; subtus ad apicem purpureo-nitidæ, macula costali fere ad apicem areæ discoidalis sanguinea. Alæ posticæ supra nigræ chalybeo-nitidæ, subtus ejusdem coloris. Macula parva costali prope angulum externum lineaque tenui curvata ad angulum analem sanguineis. Corpus nigrum, capite, collo tenui, ano coxisque sanguineis, segmenta abdominalia ad latera et margines posticos subtus carneis. An mas præcedentis?

I have intended by the specific names applied to these two insects to express the relation of analogy which they respectively exhibit to Papilio Polydorus, and Philenor.

As the moths represented in the plate exhibit an instance in which one group of insects assumes the appearance of distinct tribes, the beautiful moth plant of India and the Indian islands (Phalænopsis amabilis, *Blume*,—Epidendrum amabile, *Linn*), is also represented: affording an instance of the analogy between plants and insects of which the Orchidaceæ afford such numberless examples.

I take this opportunity of bringing together the descriptions of the several genera of Indian moths alluded to in the preceding observations as most nearly allied to Epicopeia, and which are scattered in various works.

Eterusia, Hope, Linn. Trans., vol. 18 (1840), p. 445.—Alæ angustæ integræ, nervo antico apicali trifurcato; nervo medio etiam trifurcato, furcis fere rectis, alæ posticæ broviores, integræ, colluli elongati apicesque nervos fere rectos emittente. Antennæ ♀ gracilæ vix uniserratæ. Lingua spiralis elongata. Palpi breves; abdomen terebra parva exserta instructum.

Eterusia tricolor, Hope, op. cit. tab. 31, fig. 4.—Alis anticis viridibus, variisque maculis albis notatis, posticis basi aurantiis, apicibus externe violaceis et albo maculatis. Caput atro-violaceum, antennis nigris, thorax nigor antice et postice violaceus. Corpus infra cyaneo-violaceum, segmentis abdominis albo nigroque alternè variegatis.

Long. corp. lin. 10½. Expans. alar. 2 unc. 8 lin. Habitat in agro Assamensi.

Erasmia, Hope, Linn. Trans. vol. 18 (1840), p. 446.—Antennæ ♂ bipectinatæ, pectinibus mediocribus; alæ anteriores oblongæ subovales integræ, nervis posticis paullo curvatis, colluli discoidali clausa. Alæ posticæ subrotundatæ, nervis posticis curvatis. Corpus gracile subcylindricum. Caput parvum, palpis parvis. Lingua spiralis et elongatâ. Pedes gracilos.

Erasmia pulchella, Hope, op. cit. pl. 31, fig. 5.—Argenteo-viridis, alis anticis nigris maculis viridi-cæruleo-argenteo ornatis, fascia irregulari ante medium rufa, maculisque majoribus albis pone medium positis. Alæ posticæ straminæ basi apiceque nigris, nervis viridi-cærulescentibus.

Long. corp. unc. 1. Expans. alar. 3 unc. 2 lin. Habitat Assam.

Chelura, Hope, Linn. Trans. vol. 18 (1840), p. 444.—Caput antice angustum, postice latius. Lingua spiralis subelongata. Palpi breves; antennæ ante oculos insertæ bipectinatæ. Thorax connexus magnitudine mediocri. Abdomen subcylindricum, annulis ad apicem magnitudine decrescentibus, octono minori. Cauda forcipe acuto armata, et in parte media duplici hamo instructa. Alæ angustæ, marginibus posticis subemarginatis. Pedes simplices.

Chelura bifasciata, Hope.—Straminea, antennis nigris; alis anticis fasciis binis aurantiis insignitis fasciisque nigris utrinque positis. Caput nigrum; thorace glabro nitido; abdomen annulis 7 primis obscure atris, octono rubropiceo; cauda concolori. Corpus infra nigrum. Long. corp. lin. 11½. Expans. alar. 3 unc. 2 lin. Habitat Assam.

Gymnautocera, Guérin, Mag. d'Entomol. tab. 12 (1831).—Caractères génériques—Trompe longue, palpes inférieures, très courtes, ne dépassant pas le chaperon; antennes pectinées dans les deux sexes; ailes étendues, grandes, ayant souvent des formes analogues à celles des papillons troyens; les supérieures et les inférieures également colorées; corps allongé, assez mince.

Ce nouveau genre ressemble un peu aux callimorphes et aux écailles, près desquelles nous le plaçons, mais les antennes, pectinées dans les deux sexes, l'en séparent bien nettement. La forme des ailes, dans plusieurs espèces, leur donne une grande ressemblance avec les papillons proprement dits; enfin la coloration de leurs quatre ailes étant également foncée indiquerait que les supérieures ne recouvrent pas les inférieures dans le repos, comme cela a lieu chez les écailles et les callimorphes.

G. papilionaria, Guérin.—G. alis atris anticis subfalcatis, posticis disco macula alba, suturis divisa in medio disco; singulis subtus maculis miniatis; corpore nigro, lateribus miniatis, vertice rubro. Envergure 90 mill.

On la trouve au Bengale.

Nota. Nous rapporterons à ce genre trois espèces inédites provenant des îles de la Sonde, de la Cochin-chine, et du Japon, ainsi qu'une espèce figurée par Hübner sous le nom de N. tiberina.

Campylotes, *Westw.*, in Royle's Illustrations of the Botany, &c., of the Himalayan Mountains, Part XI., 1840, p. liii.

Genus anomalum Heloneæ et Anthomyzæ, *Sw.* Gymnautoceræque *Guér.* affine.—Alæ oblongæ subovales integræ, nervis apicalibus valde curvatis; anticæ cellula discoidali clausa, nervos duos postice omittens, quorum exterior trifurcatus, posticæ etiam cellula discoidali clausa, nervo recurrente intermedio bifurcato. Corpus parvum, abdomine gracili, pone alas haud protenso. Caput parvum, ocelli 2. Antennæ graciles, biramosæ. Palpi brevissimi, supra haud discernendi, maxillæ elongatæ spirales.

Campylotes histrionicus, Westw. Æneus, alis ad costam rufo-, interne flavo-lineatis; maculisque apicalibus albis. Tab. 10, fig. 1. Long. corp. lin. 11. Expans. alar. unc. 3. Habitat in Nepalia, Hardwicke; in Montibus Himalayanis, Royle.

Corpus nigro-æneum patagiis maculisque abdominalibus lateralibus flavis. Alæ anticæ æneæ; costa fasciisque duabus discoidalibus rufis, fasciisque tribus internis per totam longitudinem alarum currentibus flavis; maculis 8 vel 9 (spatium inter nervos apicales occupantibus) albis. Alæ posticæ similiter coloratæ at maculæ terminales flavo ornantur.

This remarkable insect appears to be the extreme type of a very numerous Indian group of Lepidoptera, to which belong the species named Capys pectinicorius Thallo et Rhodope. It is impossible to decide upon their real affinities until we obtain a knowledge of the metamorphoses of some of the species.

I have also formed Bombyx sanguiflua of Drury into the genus Amesia, of which the description, accompanied by a new figure of this remarkable *Assamese* type, will appear in the forthcoming volume of Moths in Jardine's Naturalist's Library.

Several other closely allied species from India with which I am acquainted will probably appear in a future part of this work.

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PLATE VI.

ILLUSTRATIONS OF VARIOUS SPECIES OF COCCIDÆ, BELONGING TO THE GENUS MONOPHLEBUS.

The family of the well-known scale insects, Coccidæ, presents to us some of the most singular of annulose animals. Without speaking of their singular habits, we find some of them on arriving at their last state, so far departing from the typical characters of the winged insects, as to prove that Ptilota may exist, which in the imago state are not only wingless, but also footless, and antennæless, and in which even all appearance of annulose structure is lost, the creature in fact becoming an inert mass of animal matter; a slender seta arising from the breast, and thrust into the stem or leaf on which the animal is fixed, being the only external appendage to the body. Such is the case with the imago state of the females of many of the species—the males on the other hand are small, active-winged creatures provided with legs, long antennæ,and anal filaments; but, as if to keep up the anomalous character of the group, even these males possess but a pair of wings, the wanting pair being represented by two small appendages, somewhat like the halteres of the Diptera.

Some of the females are, indeed, more active than those mentioned above; they, however, undergo no change from their larva state, but continue to creep about with short legs and rudimental antennæ, and are always destitute of wings. Such is the case with the females of Pseudo-coccus, *Westw.* (Coccus *, *Burm.*) Cacti, Adonidum, &c., and with those of the genus Monophlebus of Leach. In the females of the former genus, the body is covered with a white powder, and the sides furnished with appendages. These are well known to horticulturists under the name of the *Mealy bug;* whereas in Monophlebus, the females have the body naked, without either lateral appendages or anal filaments. Such at least is the case with the European species, M. fuscipennis, *Burm.*, an insect I had the pleasure to capture, in company with its talented describer, Burmeister, on the trunks of fir-trees, in the Thiergarten, near the Brandenburg Thor of Berlin. The males have very long multiarticulate verticillated antennæ, which, with

* I regard the Coccus of the ancients, the female of which is fixed and gall-like, as the true type of Coccus.

the possession of only a pair of wings, led Fabricius to place one of the species in company with the Dipterous Cecidomyiæ.

Species I.—*Monophlebus Fabricii*, W.

M. thorace atro nitido, margine sanguineo, abdomine nigro, apice plano bifido rufo, lobis setis tribus porrectis elongatis; alis atris, lineis duabus albo-hyalinis; pedibus nigris. ♂.

Syn.—Chironomus dubius. *Fabr.* Syst. Antl. p. 46.

Habitat in Sumatra.

Obs.—The insect, described by Fabricius as the male of this species, being nearly half as small and with the setæ of the abdomen short, was evidently the male of a distinct species.

Species II.—*Monophlebus atripennis*, Klug. Burm. (Handb. 2. 80. exclus. syn. Chir. dubius, *Fab.*) M. fusco-ater, abdomine scutello alarumque basi obscure-coccineis, subpruinosis, antennis corpore longioribus hirsutissimis; alis piceis, lineis duabus albo-hyalinis; abdomine plano hirto, incisionibus profundis inter segmenta, appendiculisque duobus carnosis hirtis ($\frac{1}{2}$ lin. long.) apicalibus. Long. corp. $3\frac{1}{2}$ lin.

Habitat in Java.

Species III.—*Monophlebus Leachii*, Westw. (Zool. Jl. No. 20, p. 452.) Plate 6, fig. 1. M. picco-niger, abdomine prothoraceque fusco-carneis, scutello albido; alis piceis, lineis duabus albo-hyalinis; antennis longissimis 25-articulatis; abdomine plano, apice inciso, segmentis 5 ultimis ramum longum (longitudine crescentes) pilosum utrinque emittentibus. Long. corp. lin. $3\frac{1}{4}$. Long. rami ultimi lin. 1; long. antenn. lin. 4; expans. alar. lin. 8.

Habitat in Malabaria—In Mus. nostr.

Species IV.—*Monophlebus Burmeisteri*, Westw. (Plate 6, fig. 2.) M. picco-nigor, prothorace abdomineque fusco-carneis, scutello fasciaque inter alas albidis; alis latioribus picois, basi parum pallidioribus lineisque duabus albo-hyalinis; antennis corpore longioribus; abdomine utrinque ramos 5 longiores et pilosos emittente.

E præcedenti differt alis brevioribus latioribus, margine postico magis rotundato; et filamentis abdominalibus longioribus.

Habitat —? In Mus. nostr. Long. corp. lin. $2\frac{1}{4}$. Expans. alar. lin. $6\frac{1}{2}$.

Species V.—*Monophlebus Saundersii*, Westw., M. Burmeistori affinis at multo minor, albo-farinosus ramisque abdominalibus brevioribus, caput antennæ pedes et dorsum thoracis brunneo-fusca, thoracis lateribus abdomineque testacco-carneis, hoc ad latera ramis brevioribus hirtis instructo duobusque apicalibus longioribus. Alæ fuscæ margine postico dilatato, lineis duabus albo-hyalinis. Penis ex ano prodiens, crassus cylindricus curvatus, ramis posticis longior, apice crassior truncatus. Long. corp. lin. $1\frac{1}{2}$. Expans. alar. lin. 4.

Habitat in partibus septentrion. Indiæ orientalis, D. Campbell. In. Mus. D. W. W. Saunders.

Species VI.—*Monophlebus Raddoni*. Westw., (Plate 6, fig. 3.) M. fulvo-carneus, antennis pedibusque concoloribus, his articulis circiter 20; thoracis dorso picco; alis apice subacutis, margine postico magis rotundato, fuscis lineis duabus albo-hyalinis (antica foro ad apicem alarum ducta), costa fulvo-carnea, vena postcostali sanguinea; abdominis lateribus lobis parvis hirtis instructis, segmento ultimo appendiculis duabus majoribus ovalibus. Long. corp. lin. $2\frac{3}{4}$. Expans. alar. lin $7\frac{1}{2}$.

Habitat apud "the Gold coast" Africæ occidentalis. In Mus. nostr. communic. D. Raddon.

Species VII.—*Monophlebus Illigeri*, Westw. (Plate 6, fig. 4.) M. nigricans, capite marginibus thoracis abdomineque sanguineo-fuscis; antennis (corpore paullo longioribus 22-articulatis) pedibusque nigris; alis elongatis angustioribus, apice rotundatis, fuscis; costa obscuriori; vena postcostali sanguinea, vena mediana abbreviata, lineisque duabus tenuibus albo-hyalinis; abdomine impressionibus profundis inter segmenta, lateribusque lobis parvis ovatis hirtis instructis. Long. corp. lin. $1\frac{1}{4}$. Expans. alar. lin. 5.

♀? depressa coccinea albo-farinosa, pedibus 6 crassis, antennisque duabus longitudine tibiarum concoloribus. Long. corp. lin. $2\frac{1}{4}$.

Habitat in Terra Van Diemenii. D. Ewing, ♂ ♀. In. Mus. nostr.

Species VIII.—*Monophlebus fuscipennis*, Burm. (Handb. d. Ent. 2, p. 80, pl. 2, fig. 46.) M. ex coccineo aurantiacus, ♂ antennis articulis 25. Capito thorace pedibusque fuscis; alis lineis duabus hyalinis; ♀ undique subpubescens, antennarum articulis 11 pedibusque fuscis. Expans. alar. ♂, lin. 4.

Habitat in Germania supra truncos quercuum, pinorum, &c. In. Mus. nostr. ♂. ♀. Dedit. D. D. Burmeister.

The plant represented in the plate is the Indian Periploca esculenta.

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PLATE VII.

DESCRIPTIONS OF SOME EXOTIC SPECIES OF SAWFLIES.

The family Tenthredinidæ is one of great extent, and is distinguished by the peculiar structure of the ovipositor, which is constructed so as to act like a pair of saws in forming channels in the bark of twigs and ribs of leaves, in which the eggs are deposited. The caterpillars are also remarkable as being the only Hymenopterous larvæ furnished with prolegs, thus resembling the caterpillars of the Lepidoptera. The insects figured on the opposite plate present some striking instances of departure from the general characteristics of the family or those particular groups to which they belong.

Figure 1 represents the female of Perga Lewisii, *Westw.* (Trans. Ent. Soc. 1. p. 234), a species discovered in Van Diemen's Land, by Mr. R. H. Lewis, who observed its singular economy. "The maternal solicitude of insects for their offspring," observes the writer, "has been seldom observed to extend beyond the various contrivances which instinct directs them to make at the time of the deposition of the egg, the female insect dying in most cases immediately after*." The female Perga, on the contrary, after depositing her eggs in a longitudinal incision between the two surfaces of the leaves of one of the gum trees (Eucalyptus), sits on the spot until the exclusion of her young, upon which, when hatched, she sits with outstretched legs, preserving them from the heat of the sun, and protecting them from the attacks of enemies, with admirable perseverance. From the various experiments with the insects and their broods, described by Mr. Lewis in his paper in the Transactions of the Entomological Society, it is quite evident that the female insect constantly watches over the young until death terminates her own existence.

HYLOTOMA (*Schizocera*) *australis*, W. (Plate 7, fig. 2.) Læte cyanea, ore maculisque duabus pone oculos fulvis; alis fascia lata pone medium fuscis; abdomine transverse striatulo, alis anticis et posticis cellula marginali appendiculata; tibiis posticis calcari medio instructis, pedibus nigris, tibiis tarsisque anticis anoque fulvis; anteunis nigris. Long. corp. lin. 3.

Habitat in Australasia occidentali. D. Gould. In Mus. D. Hope.

This species differs from all the Schizocerous Hylotomæ described

* In social insects, the honey-bee, for example, the care of the young devolves upon a particular portion of the community allotted for that purpose (the neuters or workers), which are incapacitated by their structure from having any offspring of their own.

by Dr. Klug (Jahrbuch. d. Entom.) in the appendiculated marginal cells of the wings and the middle-spurred hind tibiæ. In these respects, the insect is a true Hylotoma, thus confirming Dr. Klug's union of Schizocera with Hylotoma.

PACHYLOTA, *Westw.* (Plate 7, fig. 3.)

Corpus breve crassum, capite magno quadrato plano. Ocellus medius parvus. Antennæ capite vix longiores 3-articulatæ, articulo 2ndo minuto, 3tio longo fere cylindrico. Clypeus transversus brevis in medio emarginatus. Labrum transversum breve, in medio emarginatum ciliatum; mandibulæ (fig. a) magnæ crassæ apice acutæ, extus curvatæ intus sub apicem rectæ, margine acuto. Maxillæ et labium membranaceæ parvæ, maxillæ (b in situ et b *) lobo apicali magno tenui apice dilatato et reflexo, lobo interno minuto attenuato. Palpi maxillares breves 4-articulati, articulo 1mo minuto intus appendiculo triangulari instructo; 4to magno ovato. Mentum (c) basi quadratum, supra dilatato-rotundatum gibbum, palpi labiales (c*) ad ejus angulos anticos inserti, brevissimi 4-articulati, articulis basalibus brevibus, 4to tamen tenui longiori. Labium e lobis tribus brevissimis formatum.

Alæ anticæ (fig. d) cellula unica marginali apice appendiculata, 4 submarginales, 1ma brevissima, 2nda longiori venas duas recurrentes excipiente, 3tia parva, 4ta apicem alæ attingente, alæ posticæ cellula marginali haud appendiculata. Pedes breves crassissimi subdepressi, tibiis apice omnino ecalcaratis, tarsis omnibus dilatatis (e), articulis basalibus subtus lobo minuto instructis, unguibus minutis distantibus pulvilloque transverso brevissimo.

Obs. Characteres e fœmina desumpti.

This is one of the most anomalous forms yet described amongst the Tenthredinidæ. It is most nearly allied to Hylotoma in the antennæ and wings; but differs from that as well as from every yet known species in the family, in the remarkable structure of the dilated feet destitute of tibial spurs. The structure of the mouth is also equally unlike that of every known sawfly. In the Australian genus Perga we, however, met with 4-jointed maxillary palpi.

Pachylota Audouinii, Westw. P. nigro-cyanea, capite antennis prothorace pedibusque anticis luteis; pedibus 4 posticis nigris; alis fuscis, anticis macula triangulari subcostali, apiceque maculaque ovata in cellula marginali posticarum pallidis; costa stigmateque nigris. Long. corp. lin. 7. Expans. alar. lin. 15.

Habitat in Africa (tropicali?) In Mus. nostr.

I have great pleasure in dedicating this most interesting insect to my friend Professor Audouin, by whose kindness I received it from the Jardin des Plantes.

DICTYNNA, *Westw.* Plate 7, fig. 4.

Antennæ capite cum thorace breviores 9-articulatæ, articulo 3tio longiori, sequentibus sensim crassioribus; alæ anticæ cellula unica marginali magna, appendiculata, 4 submarginales, 2da et 3tia venam recurrentem recipiunt. Alæ posticæ cellula marginali appendiculata. Corpus breve robustum. Tibiæ 4 posticæ medio inermes.

This genus connects Athalia with Hylotoma. The species figured is, in fact, an Athalia with the wings of Hylotoma. Its beautiful colour is met with in no other species of the great section of the family which have multi-articulate antennæ.

Dictynna læta W. (Plate 7, fig. 4.) Viridis nitida, abdomine subsericea; antennis nigris; pedibus testaceis tarsorum apice (præsertim posticorum) fusco; alis fusco nonnihil tinctis; costa stigmateque nigris. Long. corp. lin. 3½.

Habitat in Terra Van Diemenii. In. Mus. nostr. Communn. D. Lewis, M. E. S.

The plant figured is the Australian Eucalyptus robusta, *Smith.*

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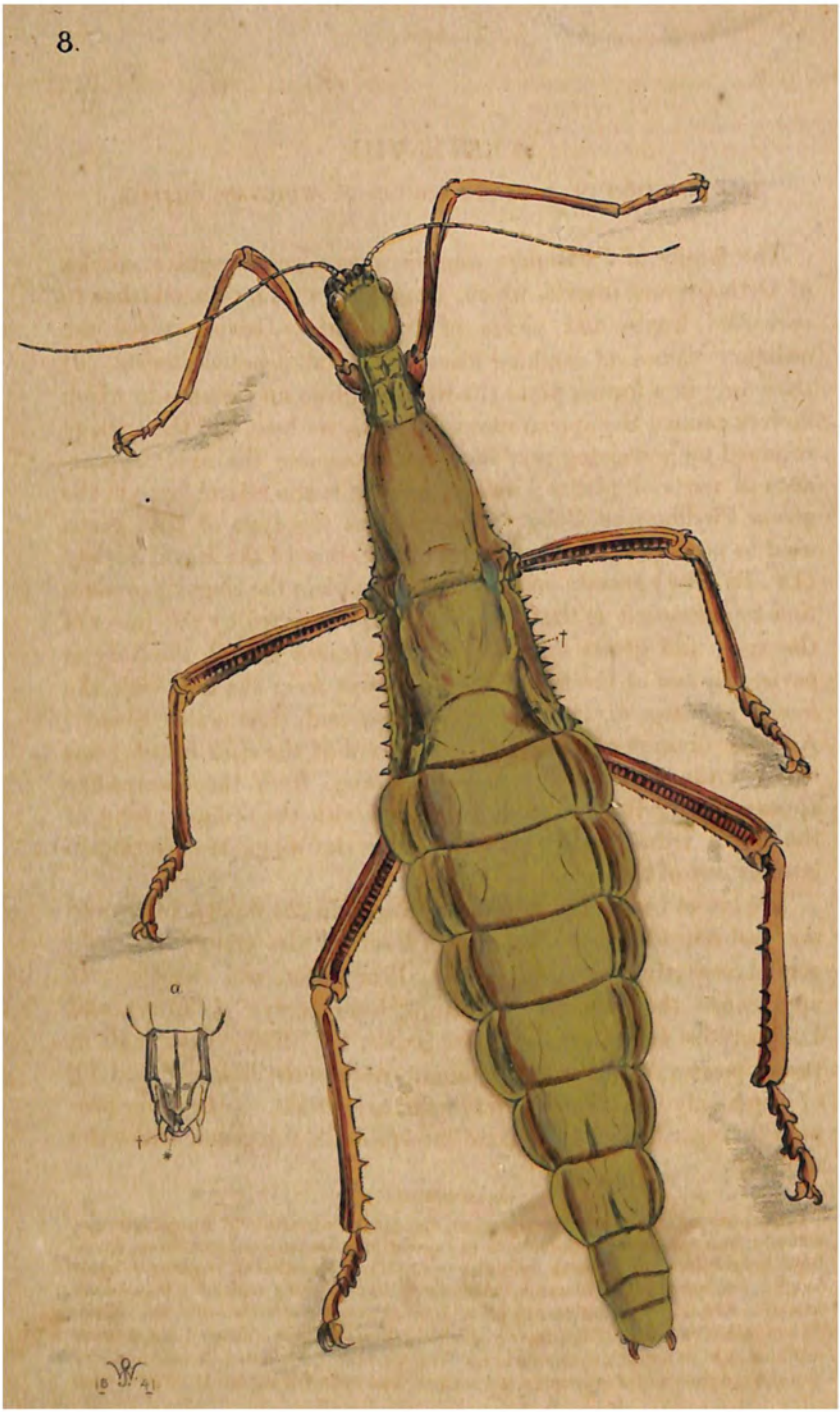

PLATE VIII.

ILLUSTRATION OF A LARGE SPECIES OF WINGLESS PHASMA.

The family of Phasmidæ comprises numerous singular species of Orthopterous insects, which, from their striking resemblance to shrivelled leaves and pieces of dried sticks, have received the ordinary names of walking-leaves and walking-stick-insects. If therefore, in a former plate (5) we have given an instance in which flowers assume the appearance of insects, we here find the analogy reversed by perceiving that insects may assume the exact appearance of parts of plants; indeed, so close is the resemblance in the genus Phyllium, or Folium ambulans, as the type of that genus used to be named, that we find even a Fellow of the Royal Society (Dr. Bradley) gravely endeavouring to explain the singular production by informing us that "the insect is nourished by the juices of the tree, and grows together with the leaves till all the body is perfected, and at the fall of the leaf drops from the tree with the *leaves growing to its body like wings*, and then walks about." Another division of the family (composed of the stick-insects) has received the systematic name of Phasma, from the spectre-like appearance of the creatures, compared with the ordinary form of the insect tribes, and in many of those the wings are wanting in both or one of the sexes.

The insect before us, one of the largest in the family, belongs to the last-named group, but differs from all the genera and sub-genera recently proposed by Gray, Burmeister, and Serville. It approaches the Phasma dilatata (Heteropteryx *d. Gray*) and Diapherodes Gigas, of the West Indies, but differs from both in the ovipositor, tarsi, and very minute state of the wings, (* and †), of which only the slightest rudiments are visible. I therefore propose to regard it as a separate intermediate sub-genus, under the name of

CRASPEDONIA.

♀. Corpus magnum planum subapterum. Caput ocellis destitutum. Antennæ longæ, articulo 1mo crasso, 2ndo brevi, 3tio et sequentibus (longioribus) æqualibus, apicalibus longioribus. Prothorax longitudine capitis. Mesothorax prothorace triplo longior, postice sensim dilatatus, lateribus utrinque spinis nonnullis brevissimis armatis. Alæ anticæ rudimentales minutæ, ad apicem mesothoracis affixæ*. Metathorax mesothoraci longitudine æqualis sed latior, lateribus spinosis; alæ posticæ minutissimæ, in medio metathoracis vix distinguendæ†. Abdomen thorace toto fere dimidio longius, supra segmentis 9 constans, basi metathorace latius, sensim vero

angustatum, segmentis basalibus utrinque membrana tenui semicirculari instructis, oviductus brevis haud exserta (fig. a, segmenta tria postica abdominalia subtus visa,* oviductus,† lobi duo plani laterales). Pedes antici simplices, tarsis 4-articulatis. Femora 4 postica triquetro-trigona subtus parum serrulata, tibiæ 2 posticæ intus spinosæ. Tarsi 4 postici crassi 5-articulati.

Phasma (*Craspedonia*) gibbosa. Prasina, lateribus thoracis pedibusque magis luteo-brunneis. Long. corp. unc. $5\frac{1}{2}$.
Habitat.—Brasilia testo Burmeistero. In. mus. nostr.
Syn. Diapherodes gibbosa. *Burm.* Handb. d. Ent 2, p. 575.

This fine insect is remarkable for having only four joints in the anterior tarsi, differing in this respect from all the known species of the family to which it belongs. The details of the mouth of this insect are figured in my "Introduction to the Modern Classification of Insects," vol. 1, p. 431, fig. 53, 2—6.

Obs.—Dr. Burmeister unites this insect with Heteropteryx dilatata, Diapherodes Gigas (M. angulata *Fabr.*), and some others, into the genus Diapherodes.

THE Insect legions, prank'd with gaudiest hues,
Pearl, gold, and purple, swarm'd into existence.
Minute and marvellous Creations these!
Infinite multitudes on every leaf,
In every drop, by me discern'd at pleasure,
Were yet too fine for unenlighten'd eye.
Some barely visible; some proudly shone
Like living jewels; *some grotesque, uncouth,*
And hideous—giants of a race of pigmies.
These burrow'd in the ground, and fed on garbage;
Those lived deliciously on honey-dews,
And dwelt in palaces of blossom'd bells.
Millions on millions, wing'd and plumed in front,
And arm'd with stings for vengeance or assault,
Fill'd the dim atmosphere with hum and hurry.
Children of light, and air, and fire, they seem'd;
Their lives all extacy and quick cross motion.

MONTGOMERY'S PELICAN ISLAND.

ENTOMOLOGICAL INTELLIGENCE, NOTICES OF NEW WORKS, &c.

(No. II.)

Société Entomologique de France.—English entomologists will, I am sure, be as much gratified as myself in learning that the Entomological Society of France, whose proceedings were for a time suspended owing to the too great expense incurred in the publication of its transactions as well as to dissensions amongst some of its leading members—and which led to the idea in this country that the society was in fact broken up—has again resumed its former vigour, and that its "Annales" are not only being again published quarterly, but that the parts which had been delayed have, owing to the generous assistance offered to the society by several of the members, also been published. The usefulness of the society has been so long acknowledged, that it now behoves English members who had delayed paying their "cotisations" to do so without further delay; as the society, in consequence of the deficiency caused by the delay in these payments during the last year or two, has not yet entirely disburdened itself of its engagement to the publishers of its "Annales." In the part of the "Annales" recently published, may be mentioned the continuation of Solier's memoir on the Heteromera, and descriptions of numerous new and interesting species of different orders; particularly very long and elaborate articles, by the Marquis Spinola, upon the Hymenoptera of Egypt and Cayenne, and upon the family Fulgoridæ. These parts also present to us a far greater number of memoirs upon the economy and habits of various insects than are to be found in the earlier volumes.

Popular information relative to the habits of insects obnoxious to vegetable productions.—The reproach which has so often been made against the entomologist, that his attention is not sufficiently devoted to the investigation of obnoxious insects, and to the discovery of beneficial remedies for destroying them or preventing their attacks, has now lost much of its weight. In Germany, works expressly addressed to the horticulturist, agriculturist, and arboriculturist, have long been numerous and valuable; the greater number however being devoted to forest insects, as the great extent and value of the German forests necessarily induce a greater degree of

attention to the insects which attack trees. It would occupy far too great a space to give even the names of the German works upon obnoxious insects, but the work of Ratzeburg, of which two quarto volumes devoted to the Coleoptera and Lepidoptera have appeared, illustrated with numerous exquisite plates representing the insects in all their states and the modes of their attack upon vegetable productions, is too important a work to be passed over in silence. Bouché's "Naturgeschichte der Schädlichen und Nützlichen Garten-insekten," and the elaborate report of Kollar, made to the Royal and Imperial Agricultural Society of Vienna, on the insects injurious to gardeners, foresters, and farmers (whereof a translation by the Misses Loudon was lately published by the publisher of this work) ought not also to be forgotten.

In France, M. F. Audouin has especially devoted his attention to the natural history of obnoxious insects, and in the series of lectures which he annually delivers at the Jardin des Plantes, he especially illustrates their natural history, although the greater portion of his researches are as yet unpublished. Of course as the vine is an important object of culture in France, the insects which attack that plant have been especially studied, and the first part of a very elaborate work by M. Audouin, with numerous plates, giving a complete illustration of one of the species of Tortricidæ, which is especially destructive, has recently appeared under the auspices of government. The Baron Walckenaer has also published a treatise on the insects which attack the vine, in the Annales of the French Entomological Society. In the south of France and Italy, where the olive is greatly cultivated, numerous memoirs have from time to time been published on the insects which attack that tree, the greater number of which have been enumerated by Costa in the first part of his "Corrispondenza Zoologica," published at Naples, in 1839.

In England but few works of merit have appeared illustrating the habits of obnoxious insects. In 1829, "A Treatise on the Insects most prevalent on Fruit-trees and Garden produce," was published by Joshua Major, a landscape gardener, whose knowledge of insects appears to have been very slight; and, in 1840, a work appeared under the title of "Blight on Flowers, or figures and descriptions of the insects infesting the flower-garden," by Samuel Hereman, (London, Cradock) in 8vo, with numerous gaudily coloured plates, in which are representations of many species of insects which seem to me to have no other existence than in the fancy of the delineator.

Of a very different character are the treatises published by the late Mr. Knight in the transactions of the Horticultural Society

upon various species of insects which attack fruit trees; such as the American blight, the pear-leaf blister moth, &c.

The Entomological Society of London also, desirous of acquiring public support by giving proofs of a desire to render its labours useful, instituted prizes for memoirs on destructive insects, and if no other good had originated from the society than the publication of Mr. Le Keux's memoir on the turnip Haltica, and Mr. Newport's on the Athalia Centifoliæ, it would have amply merited the support it has received.

A series of papers appeared in the early volumes of the Entomological Magazine, by an anonymous writer, on different species of obnoxious insects, and in 1837, I commenced the following series of articles in Loudon's Gardener's Magazine:—

No. 1. The Turnip Flea-beetle (*Haltica nemorum*), including descriptions of two new British species.
2. *Otiorhynchus sulcatus.*
3. The Turnip Saw-fly (*Athalia Centifoliæ*).
4. The Onion Fly (*Anthomyia Cepa-rum*).
5. Wheat Flies (*Chlorops glabra*, &c.)
6. The Asparagus Beetle (*Crioceris Asparagi*).
7. Rose Moths (*Argyrotoxa Bergmanniana*).
8. The Small Ermine Moth (*Yponomenta padella*).
9. The Slimy Grub of the Pear, &c. (*Selandria Æthiops*).
10. Caterpillar of the Apricot-bud (*Ditula angustiorana*).
11. The Wire Worm (*Elater lineatus*).
12. The Codling Moth (*Carpocapsa pomonella*).
13. The Elm destroying Beetle (*Scolytus destructor*).
14. Apple insects (*Anthonomus Pomorum* and others).
15. Celery and Chrysanthemum Leaf Miner (*Tephrites Centaureæ et Artemisiæ*).

Moreover, in Loudon's Arboretum Britannicum, I have given an account of the insects which attack the principal genera of English trees.

In Scotland, Mr. J. Duncan has also published a series of articles in the Quarterly Journal of Agriculture, on obnoxious insects, of which the following is a list, together with references to the volumes in which they are described:—

COLEOPTERA.

Cataphagus lineatus	Vol. VIII.	p. 101	Hylobius Abietis	Vol. XI.	p. 396
„ obscurus	do.	p. 348	Scolytus destructor	do.	p. 399
Haltica nemorum	do.	p. 353	Hylurgus piniperda	do.	p. 404
Calandra granaria	Vol. IX.	p. 3	Tomicus	do.	p. 406
Anthonomus Pomorum	do.	p. 6	Hylesinus	do.	p. 407
Phyllobius Mali	do.	p. 11	Ptinus	do.	p. 408
Balaninus Nucum	do.	p. 11	Anobium	do.	p. 408
Otiorhynchus sulcatus	do.	p. 13	Melolontha vulgaris	do.	p. 566
Apion apricans	do.	p. 15	Amphimalla solstitialis	do.	p. 572
„ assimile	do.	p. 18	Sinodendron cylindricum	do.	p. 573
„ flavipes	do.	p. 18	Prionus-Clytus-Callidium	do.	p. 575
Orchestes Fagi	do.	p. 395	Crioceris Asparagi	do.	p. 576
Centorhynchus contractus	do.	p. 395	Phædon Vitellinæ	do.	p. 578
Cryptorhynchus Lapathi	do.	p. 396	Bruchus granarius	do.	p. 579

DIPTERA.

All the species of Œstridæ* Vol. x. p.
Tabanidæ, &c. . . . . do. . p.
Forest-flies (Hippobosca) . Vol. xi. p. 50
Sheep Spider-fly . . . . . do. . p. 54
Bird Spider-fly . . . . . do. . p. 57
Blow-flies . . . . . do. . p. 60
Musca carnaria . . . . . do. . p. 61
„ Cæsar . . . . . do. . p. 62
„ vomitoria . . . . . do. . p. 63
Anthomyia lardaria . . . .Vol. xi. p. 63
„ Ceparum . . . . do. . p. 362
„ Brassicæ . . . do. . p. 366
Psila Rosæ . . . . . do. . p. 367
Tipula Oleracea . . . . do. . p. 368
Cecidomyia Tritici . . . . do. . p. 372
Chlorops Pumilionis . . Vol. xii. p. 120
Tephritis Onopordinis . . . do. . p. 124
Piophila Casei . . . . . do. . p. 125

HYMENOPTERA.

Lophyrus Pini . . . . Vol. xii. p. 129 | Lophyrus rufus . . . Vol. xii. p. 134
Athalia Centifoliæ . . . Vol. vii. p. 558.

Still more recently Mr. Curtis has commenced the publication of a similar series in Dr. Lindley's weekly newspaper, the Gardener's Chronicle. The articles which have hitherto appeared are the the following:—Scæva Ribesii in No. 4; Scale insects in No. 9; The Red Spider (*Acarus telarius*) in No. 11; The Snake Millepedes (*Julus*) in No. 13; *Thrips physapus* in No. 15; Pear-tree Blister Moth (*Tinea Clerckella*) in No. 17; Black and Clay coloured Vine Weevils (*Pachygaster sulcatus et picipes*) in No. 19; The Rocket Tinea (*Cerostoma porrectella*) in No. 21; and the Lettuce fly (*Anthomyia Lactucæ*) in No. 23.

The Heteropterous Genus Phyllomorpha (illustrated in plate 2) offers an instance of the want of uniformity in the principles which regulate the modern generic nomenclature of insects, and which it is to be regretted are not more universally recognised amongst naturalists in general. The genus was proposed, with the name which I have adopted, in Guérin's Magasin de Zoologie, and as the two terminal syllables are formed from the *feminine* Greek word μορφὴ, the feminine Latin termination was given to the word Phyllomorpha. Dr. Burmeister, however, adopting the principle that the generic names in each family should follow the sex of the primitive, or typical genus, altered the name to Phyllomorphus, to accord with the sex of the name of the typical genus, Coreus. Still more recently M. Rambur, (in his work on the Entomology of Andalusia,) on the principle that no name which had been used specifically should afterwards be given to the genus in which that species so named was introduced (a new specific name being in such case required for the species in question), has altered the name

* The papers include insects hurtful to animals as well as vegetables.

Phyllomorpha to Craspedium, from the neuter Greek κράσπεδον, thus restoring the specific name Phyllomorphus to P. Latreillii. Without, however, entering into the question of the propriety of giving the name in the neuter, because the Greek derivative is also neuter, M. Rambur's name cannot be adopted, being already used by M. Macquart for a fine genus of Diptera, allied to Asilus *. (Diptères Exot. tom. 1, part. 2, p. 32.) Without also desiring to uphold the nomenclature of genera taken from the names of species, a custom which has been carried to too great an extent, it appears to me that, as in this case, where the name given to a species expresses a generic character (and no name could be devised for these insects more expressive than Phyllomorpha) and not a specific one, and where there can be no possibility of confusion of idea as to the insect intended by the new specific name proposed for the insect (as by giving the name of Latreillii to Latreille's species), we may adopt the principle employed by Laporte in naming this genus.

S. S. Saunders, Esq., has captured one of the species of the 2nd section of this genus, under stones on a mountain near Yanina, in Albania, and the Rev. F. W. Hope has obtained specimens of Ph. algirica, two of which (♂ and ♀) are very pale grey, slightly marked with dark brown, without any tinge of red, whilst another is somewhat larger and of a duller colour, with dark red markings. I do not, however, perceive any other absolute specific distinctions between them.

GENERA INSECTORUM ICONIBUS ILLUSTRAVIT ET DESCRIPSIT HERMANNUS BURMEISTER. Nos. 1 to 7, large 8vo, Berlin.

THIS work mostly amply answers to its title. It is in fact a more complete illustration of the genera which are given in it, than has been given in any previous work—the various organs and parts of the body being elaborately detailed. The early numbers were entirely devoted to the Homopterous insects, but in the recent ones the selection has been more miscellaneous. The genera of Homoptera represented are the following:—Lystra (L. auricoma, *Burm.* figured), a remarkable species from Mexico, with the white floccose matter at the extremity of the body produced into a great number

* In his plate 8, M. Macquart had named this genus Blepharis, which he changed in his text to Craspedia. The typical species is Asilus coriarius of Weidemann. The second species, Crasp. Audouinii, is identical with the insect which I described and figured in Jardine's Nat. Library, Entomol., vol. 1, p. 329, pl. 35, fig. I, under the name of Asilus (Blepharotes) abdominalis. When I described the species I had only seen males of this and females of A. coriarius, and considered that these might prove to be the sexes of one species; I am now, however, acquainted with the sexes of both.

of long filaments, some of which, in a specimen which I possess, are at least four inches long), Acocephalus, Bythoscopus, Eurymela, Selenocephalus Cælidia, Eupelix, Jassus, Ulopa, Cephalelus (C. infumatus, *Perch.*, Dorydium paradoxum, *Burm.* Handb. der Ent. 2. 106), Dorydium (a new genus analogous to Cephalelus, but most nearly allied to Eupelix, to which Burmeister now applies this generic name, which had become a synonym of Cephalelus); the species, D. lanceolata, is from Sicily (and is remarkable for the very long head, pointed into a snout like a Fulgora); Ledra (I possess a second undescribed species from the East Indies), Xerophlæa, Gypona, and Typhlocyba (Eupterix, Curtis.)

In the order Coleoptera, the Lamellicorn beetles are chiefly illustrated. An entire synopsis is given of a group of the Macleayian Dynastidæ (consisting of the genera Chalcosoma, Megasoma K (Megalosoma, *Burm.*); Xylotrupes, *Hope*, Golofa, *Hope*, and Augosoma, *Burm.*, (Centaurus, Jephtha and Ganymedes), Dynastes, M'L., also belongs to this group. The following isolated genera are also represented:—Eudinopus, a new genus of Scarabæidæ, M'L., founded upon a large South American species (of which I had prepared a figure for this work, which the author gives as new, but which was described by Schreibers in the Linnæan Transactions, under the name of Scarabæus Dytiscoides.)

Platygenia barbata, ♂ and ♀; and Hypselogenia, *Burm.*, (composed of two African Cetoniidæ, Dipl. concava, and albopunctata, G. P., which M'Leay unites with Ischnostoma of Gory and Perchéron, from which, however, they are stated by Burmeister to differ in almost every character).

Acropis, *Burm.*, is another Coleopterous genus from South America, founded upon a small xylophagous beetle, in which the eyes are placed upon lateral prolongations of the head as in Diopsis.

Opsomala Serv., is the only Orthopterous genus figured. The genera Thrips, Phlæothrips *Hal.*, and Heliothrips, and the Pediculideous genera Phthirus and Pediculus, are also elaborately illustrated.

The work is entirely written in Latin, which renders it still more valuable, as well as indespensable to all who desire to possess beautiful figures united with correct structural details of rare and interesting genera. The two forthcoming numbers will be chiefly devoted to the Lamellicorn beetles, including a figure of the male of Mr. Cuming's new Eucheirus (E. quadrilineatus, *Waterh.*) The genera Fulgora and Pyrops will also be illustrated in them.

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PLATE IX.

DESCRIPTION OF A NEW GENUS OF MANTIDEOUS ORTHOPTERA.

It is amongst the Orthoptera that we find some of the most striking and ugly-formed insects; this is especially the case with many of the soothsayer or praying mantides; such as M. strumaria, *Linn.*, M. cancellata, *Fabr.*, etc.; in which we find the prothorax developed on each side into a very broad thin membrane of variable form, resembling a leaf. These species, except in respect to this prothoracic membrane, agree in general character with the genuine species of the restricted genus Mantis; and consequently we find that Professor Burmeister has rejected the generic name of Chæradodis, which M. Serville had proposed for them, using it only as a sectional or subgeneric name, and giving the subgeneric names of Rhombodera and Craurusa to other allied analogous species. Other species in the same family are distinguished by having a small membranous appendage at the extremity of the four posterior thighs; but in these the head is either cornuted or tubercled, as in Empusa, Blepharis, Vates, *Burm.*, etc.

The species figured in the accompanying plate are intermediate between these two groups, agreeing with Vates, &c., in the foliolets at the extremity of the hind thighs, and with Chæradodis, &c., in the crown of the head not being cornuted, and in the dilated membrane of the prothorax. I accordingly form them into the genus

DEROPLATYS.

Caput vertice transverso inermi plano. Oculi rotundati. Antennæ gracillimæ. Prothorax elongatus, membrana maxima formæ variæ utrinque instructus. Abdomen breve segmentis apicalibus latis et ad latera lobatis. Pedes quatuor postici graciles longi, femoribus ad apicem postice membrana parva instructis. Alæ et tegmina formæ variæ. Insecta Asiatica.

Species I. *Deroplatys desiccata*, Westw. (in Jardine's Naturalist's Library, Insects, Introd. pl. 9.)

Fusca, prothorace (tab. nostr. 9, fig. 3) membrana maxima tenuissima (posticè utrinque valdè incisa) instructo; tegminibus brevibus latis, apice obtusis subtus versus apicem oculo magno albo, pupilla nigra; alis nigris apice et costa fuscis. Long. corp. 3 unc. Expans. alar. 3½ unc.

Habitat in Malacca. In Mus. D. F. W. Hope.

Obs. Larva thoracem ejusdem formæ possidet.

Species II. *Deroplatys lobata* (Chœradodis l. Guérin. Mag. d. Zool. Ins. pl. 234, et Voy. de l'Astrolabe, p. 69)—Tab. nostr. 9, fig. 4, prothorax.

Habitat ignota.

Species III.—*Deroplatys angustata*, W. pl. 9, fig. 2.

Elongata, fusca tegminibus obscurioribus macula parva pallida subcostali; prothorace rhombiformi, angulis rotundatis, marginibus lateralibus subsinuatis, femoribus tibiisque posticis nigro annulatis, pedibus anticis extorne fuscis, coxis interne albidis apice nigris, femoribus albidis macula media nigra.

Long. corp. unc. 2.

Habitat in insula Java, D. Horsfield. In Mus. Soc. Morc. Ind. Orient. Londini.

Species IV.—*Deroplatys arida*, Westw. plate 9, fig. 1.

Fusco-ferruginea, prothoracis membrana posticè angustata (folium quercûs nigræ, *Linn.* Loudon. Arborct. Britann. p. 1891, exactè referenti) tegminibus aliisque elongatis ad apicem attenuato-angulatis, his plaga magna baseos nigra nitida, illis subtus maculis sex nigris coloro albo separatis: femoribus anticis extus fuscis macula parva fulva ad marginem superiorem versus apicem, intus ferruginois margine inforo flavo, nigro maculato; tibiis anticis extus fuscus, intus nigris.

Long. corp. 2½ unc. Expans. tegmin. 5 unc. Long. prothor. lin. 10½ (mens. angl.) Lat. proth. lin. 10.

Habitat in Aurea Chorsoneso vel in insula Jabadii (Sumatra). In Mus. D. D. Fortnum et Nowman.

The plant of which a small portion is represented is Spathoglottis pubescens, *Lindl.*, one of the Indian Orchidaceæ, figured by Wallich in his Plantæ Asiaticæ Rariores, vol. 3, pl. 203.

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1b
1c

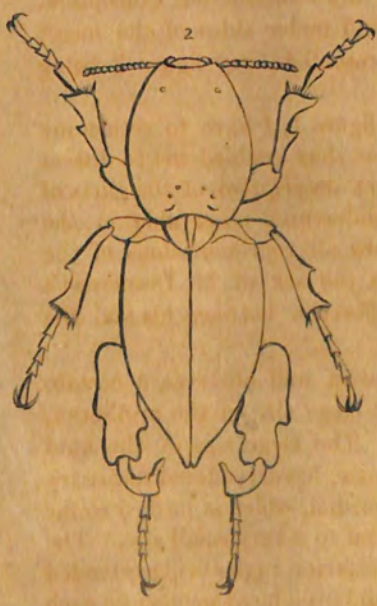
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PLATE X.

THE COLEOPTEROUS GENUS HYPOCEPHALUS ILLUSTRATED.

The genus Hypocephalus was first proposed by M. Desmarest, in Guerin's "Magasin de Zoologie" for 1832 (vol. 1, pl. 24), being founded upon a most anomalous beetle of large size from the province of the mines in the interior of Brazil, whose natural relations have perplexed all subsequent entomologists. The insect is described in detail, and outline figures are given of the dorsal and lateral aspect of the insect, with a front and side view of the head and figures of the palpi detached. My figure 2 is copied from Desmarest's figure of his insect seen from above.

Five years afterwards, Gistl, a German entomologist, unacquainted with Desmarest's figure, published another description and figure of evidently the same insect, in the first number of his "Faunus," under the name of Mesoclastus paradoxus, forming it into a new and distinct family of the Pentamerous Coleoptera, named Xenomorphæ. The upper and under sides of the insect and the front of the head are represented; my figure 3 being copied from his first figure.

For the insect represented in my figure 1, I have to return my best thanks to A. Melly, Esq. who has thus enabled me to dissect this singular insect, and give a correct description of the parts of its mouth. Notwithstanding the differences observable in the three figures, I consider that they are all representations of the same insect; perhaps a variation in the sex of M. Desmarest's insect may account for the great difference between his and the other two figures.

The insect exhibits, as M. Desmarest well observes, a certain analogy with the mole cricket in the large size of the prothorax, thick hind legs and short antennæ. The large size of the hind feet, and especially of the posterior coxæ, have rendered necessary an extra-development of the mesosternum, which is pushed so far backwards that the abdomen is reduced to a very small size. The head is of a curious form, its lateral posterior angles being extended backwards, forming somewhat acute and prominent points; on each side beneath the antennæ the head is produced into a conical

deflexed horn, having a tubercle near its tip on the inside; these two horns are mistaken by Gistl for the maxillæ; an elevated ridge runs across the middle of the head on the upper side; the eyes are oval, and placed obliquely behind the base of the antennæ, the anterior part or clypeus (mistaken by Gistl for the labrum) having two deep impressions. The true labrum (mistaken by Gistl for the labium, and incorrectly described by Desmarest as triangular) is small, oblong, emarginate in front, and setose. The mandibles are large, horny, straight, prominent, and of an elongate conical form, with a large tubercle near the base on the outside. The maxillæ (overlooked by Desmarest) are small, and but slightly produced, the base horny, the apical lobe small and hairy, the lower lobe very minute, the maxillary palpi about as long as the mandibles, 4-jointed, the basal joint longest, the 4th larger than the 3rd, and securiform. The mentum (overlooked by Dr. Gistl, and described by Desmarest as the 'levre') is of a transversely oval form, flat and horny, originating above a line drawn between the two deflexed horns of the head. The labium (or ligula) is very minute and setose, not appearing beyond the two short scapes of the labial palpi, which are as long as those of the maxillæ, and 3-jointed (the 2nd joint being equal in length to the 2nd and 3rd joints of the maxillary palpi united). The 3rd joint is equal and similar to the last joint of the maxillary palpi. The antennæ are short, and constructed exactly as in Spondylus, the second joint shortest, and the last rather flat and obtuse. The elytra are partially soldered together. The two anterior tibiæ have two unequal-sized spurs at the tip, the middle tibiæ are also two-spurred, but the spurs are of equal size; the hind tibiæ are not spurred. The prosternum is channelled, and produced between the anterior coxæ, terminating in an obtuse point. The tarsi are 5-jointed, the four basal joints gradually decreasing in size, their terminal angles produced but not bilobed; these joints on the under side are furnished with two narrow rows of short hairs. Between the ungues is a very short plantula, which is most prominent in the fore legs, but is not terminated by bristles. The basal joint of the hind tarsi is much shorter than in the middle feet. The general colour of the insect is very dark chesnut, the thorax, head, and feet being very shining, and covered with fine punctures, and the elytra are rather redder chesnut, and very rugose; the prothorax is marked behind with several slight circular impressions, arranged in a semicircle; and there are two others near its anterior angles.

The following are the dimensions of my specimen (which is, I believe, the only one existing in any of the Metropolitan cabinets *).

	LINES (ENGLISH.) †	
Length of the Mandibles	3	
— — Head	5½	
— — Prothorax	13	
— — Elytra (and Scutellum)	15	
		36½
Length of the Antennæ	4	
Breadth of the Prothorax (across the middle)	10½	
— — Elytra	10	

M. Desmarest's specimen is only $2\frac{1}{5}$ inches or 55‡ millemetres long, whilst that described by Gistl is still smaller, being $2\frac{1}{12}$ inches long.

From the large size of the hind legs, we might at first consider the insect to be capable of leaping, but its whole form contradicts such a notion, and leads us to conjecture that it is a slow and sluggish creature; indeed Dr. Erichson states that he had been informed by the late Prince of Neuwied, that he had taken the insect creeping on the ground. Mr. Melly, on the contrary, informs me that three specimens he had received were reported to have been found in the carcase of a dead horse. From the formidable appearance of the mouth-organs, we might also at first consider the insect to be highly rapacious; but when we examine them in detail, we find a formation evidently unfitted for carnivorous habits; indeed the mandibles are so formed that if their inner edges are brought together they meet in a nearly straight line, or rather the *tips are slightly bent outwards*, so as to lead to the idea that the creature cannot by any possibility bite. Again, the maxillæ and labium are very minute, whilst the two deflexed horns at the sides of the mouth appear quite in the way, were the insect a rapacious one.

My friend, Professor Burmeister, having examined my specimen of the insect and the accompanying figures, has favoured me with the following observations upon its natural relations.

LONDON, 14TH JUNE, 1841.

"According to your desire I give you the following remarks upon the natural affinity of the curious animal Hypocephalus, which

* A specimen (which is, I believe, the only one in Paris) has recently been purchased for the Museum d'Hist. Nat., at the price of 700 francs.

† I employ the English length measure, *i.e.* 12 lines to the inch. My specimen is, therefore, 3 inches and ½ a line long. It is shorter in my figure by 2 lines, but allowance must be made for the curve of the body.

‡ An inch is equal to 25 French millemetres.

I yesterday suggested to you in your own library, and which I now have more fully detailed. Having now examined the genera most nearly allied to Hypocephalus in Mr. Hope's collection, I am quite convinced that Hypocephalus is a Longicorn, and belongs to the sub-family of the Prionidæ, in the vicinity of Dorysthenes [Cyrtognathus *Fald.* Prion. rostratus and Pr. paradoxus]—Spondylus, Trictenotoma and Amallopodes, *Dup.* (Acanthinodera Cumingii, *Hope*); from all which genera Hypocephalus borrows some of the characters.

"Commencing with the antennæ, I find the greatest resemblance between those organs of Hypocephalus and Spondylus, owing to their shortness and moniliform figure, which we observe not only in Spondylus, but also in a new curious prionideous insect from Cordofan, communicated to me by Mr. Kollar, under the name of Prionus Spondyloides, and which I have also seen to-day in Mr. Hope's collection*. The whole structure of the head is still more nearly alike in Hypocephalus and Dorysthenes; and I find no other difference except the curious mode of articulation of the head with the prothorax in the former genus. The mandibles moreover in Hypocephalus are shorter and broader than in Dorysthenes, although the large prominent teeth behind the mandibles (which are by no means articulated as might be conceived from M. Desmarest's figure) are more developed in Hypocephalus than in Dorysthenes. The other parts of the mouth in both genera are entirely similar; and you perceive from the very minute mando (or inner lobe of the maxillæ) that Hypocephalus must be prionideous, because the form of that part is the first family character of the Prionidæ.

"As to the prothorax, there is also a great resemblance between Hypocephalus and Dorysthenes; and the greatest difference is merely its increased length, whilst in all other Prionidæ the prothorax is broader than long. With this character the shortness of the elytra is in opposition, these organs being as much abridged as the prothorax is elongated. This relation, I confess, is very abnormal, but not exclusively peculiar among the Longicorns, as proved by the genus Gnoma. Respecting the sculpture of the surface, it is the same as in most Prionidæ, as well as the colour and texture, which has in all parts the appearance of a coria-

* I believe this is identical with Coptocephalus brasiliensis, figured in Griffith's "Animal Kingdom"—Metopocoilus maculicollis, Serville. J. O. W.

ceous tegument so well exhibited in most species of Prionidæ. I assert that an entomologist who knows nothing of the whole animal except an elytrum, must be convinced by the sculpture that it is part of a prionideous insect. I regret that we have not examined the wings, because these organs, according to my observations, afford the best family characters in the majority of the Coleoptera, and I recommend you to examine them*.

"The legs present stronger grounds of disputation; and I concede that the incrassated femora and incurved tibiæ are different from the type of the family; but this single character will not suffice to remove Hypocephalus from Prionus, because we find in other genera singular forms of legs as in Psalidognathus, Amallopodes and Trictenotoma. From this last genus, which in my opinion is also prionideous, Hypocephalus derives its tarsi, except those of the posterior legs, which are only four-jointed in Trictenotoma. The tarsi of Amallopodes are still more like those of Hypocephalus, except that the penultimate joint is much smaller, thus scarcely receding from the type of the family, as is the case in Trictenotoma and Hypocephalus.

"In the last place the observation that Hypocephalus lives in rotten wood, upon the ground in forests, accords with my opinion of its natural affinities."

Since the arrival of Professor Burmeister in Paris, he has informed me that M. Guérin Meneville had likewise already entertained the same opinion relative to its relation with the Prionidæ, and had prepared a series of figures illustrating its various organs in detail. Notwithstanding the various anomalies exhibited by the genus noticed by Burmeister (to which we may add the want of emargination in the eyes), I must confess that the relation pointed out in the preceding communication appears to me to be the correct one †. It may further be mentioned that the peculiar toothing of the anterior tibiæ occurs in the Australian Pri-

* The insect is totally destitute of wings.—J. O. W.

† Desmarest thinks it nearest to Necrophorus amongst the Clavicorn Pentamera (such also Mr. Melly informs me is the opinion of Dr. Klug), whilst Gistl considers it as forming the passage between the Lamellicorns and Melasomatous Heteromera. In my "Introduction" I suggested that the nearest relations appeared to be such genera as Passandra, Catogenus, Rhysodes, and Calodromus, which appear to me to connect the Cucujidæ with the Brenthidæ. In these genera the formation of the tarsi is more or less anomalous, so that we are not on that account to reject this relation. In Passandra, &c., the sides of the head beneath are developed into two flat plates (analogous to the deflexed horns of Hypocephalus). There is also an apparent approximation to the general form of this genus exhibited by various male Brenthidæ, which have thick denticulated feet and short moniliform antennæ, but the structure of the mouth and of the tarsi is very different.

onus pilosicollis (Hope in Trans. Ent. Soc. vol. 1, pl. 2, fig. 1.), and in Cantharocnemis Spondyloides, Dupont, an uncharacterised genus from Senegal. Another curious character, to which perhaps but little weight ought to be given, is the great length of the basal, and the shortness and triangular form of the terminal joint of the palpi. I have, however, found securiform maxillary and labial palpi in a curious Prionus, obtained by Mr. Raddon from raw turpentine (Hoplopteryx denticulatus, Westw. ined.). The minuteness of the labium or ligula is also to be noticed, since in almost all other Longicorns it is visible beyond the base of the labial palpi.

Having elsewhere suggested that Spondylis is more nearly allied (from its larva) to the Lepturidæ than to the Prionidæ, and Hypocephalus, being more allied to Spondylis and Cantharocnemis than to the other genera mentioned by Burmeister, it becomes interesting to speculate on the degree of relation which Sagra (so nearly allied to Leptura) bears to Hypocephalus.

DESCRIPTION OF PLATE X.

Fig. 1. My specimen of Hypocephalus armatus.
1*a*. Under side of the head. 1*b*. One of the maxillæ.
1*c*. The labrum.
2. Copy of Desmarest's figure of Hypocephalus armatus.
3. Copy of Gistl's figure of Mesoclastus paradoxus.

11.

PLATE XI.

DESCRIPTIONS OF TWO NEW SPECIES OF PAPILIO FROM NORTHERN INDIA.

In the fine collection of Assamese insects, collected by Mr. Griffith, already alluded to in p. 17, and which has supplied materials for two very interesting memoirs published by the Rev. F. W. Hope, in the Transactions of the Linnæan Society, are several new species of Papilio, amongst which that represented in the two lower figures in plate 2 is especially worthy of notice on account of the very peculiar character of the markings of the under surface of the wings. It may thus be characterized :—

PAPILIO GYAS, *W.* Plate 11, fig. 1 & 1.

P. alis anticis subhamatis posticis caudatis; supra fuscis margine obscuriori luteo submaculatis, macula parva cærulea ad angulum ani; subtus brunneis medio pallidis lunulisque subargenteis notatis.

Expans. alar. unc. 4¾. Habitat Assam. D. Griffith. In Mus. D. Solly.

The wings above are of a dull brown colour, the anterior having a dark brown triangular spot about the middle, extending across the discoidal cell, at the extremity of which is a second similar spot; the outer margin is darker, with six luteous submarginal patches; between the apex of the wing and the extremity of the discoidal cell are three indistinct oval patches of a similar colour. The hind wings are similarly coloured, but the margin is darker brown and wider, and the luteous spots assume the appearance of indistinct lunules; at the anal angle is a small patch of blue scales. The body above is clothed with greenish hairs; on the under side the colours are much brighter and more varied. The base is occupied by a large space of rich dark red-brown, or maroon, of which there is also a patch at the extremity of the discoidal cell. This is succeeded by a bar of whitish fleshy-coloured tint which passes gradually to brown and purple; near the apex of the fore wings is a large patch of pale opaline colour, from which extends a bar of fulvous brown, terminating above in white angles preceded by purplish and obscure brown arches, the margin is brown, within which is an obscure bar of luteous. The extremity of the discoidal cell in the hind wings is occupied by a dark brown patch preceded by a white opaline arch edged with black; a bar of the former

colour extends also to the anal angle, and adjoining the tail are several luteous spots preceded by opaline-white lunules; the space between them and the discoidal cell being rich dark brown. The whole under side has a glossy appearance. The body beneath is brown, the abdomen yellowish. The legs are red brown. The specimen represented is a male.

The species is most nearly allied to P. Peranthus. I have been very careful in giving the precise shape of the wings, both in this and the following species.

PAPILIO CLOANTHUS, *W.* Plate 11, fig. 2.

P. alis elongatis, anticis apice acutis, posticis caudatis; nigris, fascia media communi subnuda argenteo-virescenti, versus apicem anticarum in maculas 4 divisa, posticis maculis submarginatibus concoloribus.

Expans. alar. unc. 3¼. Habitat in partibus septentrionalibus Indiæ orientalis.

The wings above are almost black, the centre marked with a very broad fascia, common to each, of a whitish-green tint, but almost transparent. The extremity of this bar is broken in the apical half of the fore wings into four patches of unequal size, the first divided transversely and the second longitudinally by the veins. The hind wings are moreover ornamented with four unequal-sized patches of similar colour, and the incisions between the tail and anal angle are edged with white.

The under side is paler brown, with similar silvery green semi-transparent spots. In addition to which the base of all the wings is also slightly green, and the fore wings have a pale line near to the outer margin; near the base of the hind wings are also three small and slender red lunules edged with black. At the extremity of the discoidal cell are also several black spots edged with dull pinkish-red, a similar spot is at the anal angle, and another at the side of the first green patch. The body beneath is pale greyish-green. The abdomen whitish with a black bar on each side.

I have seen this species in the cabinets of F. J. Parry and W. W. Saunders, Esqrs., the British Museum, as well as in several other collections.

This insect is most nearly allied to P. Sarpedon and the neighbouring species, but is at once distinguished by being tailed, as well as by its acute fore wings, and the semi-transparency of its delicate silvery-green markings.

> "Amidst the loud applauses of the shore,
> Gyas outstripp'd the rest, and sprang before;
> Cloanthus, better mann'd, pursued him fast."
>
> DRYDEN'S VIRGIL.

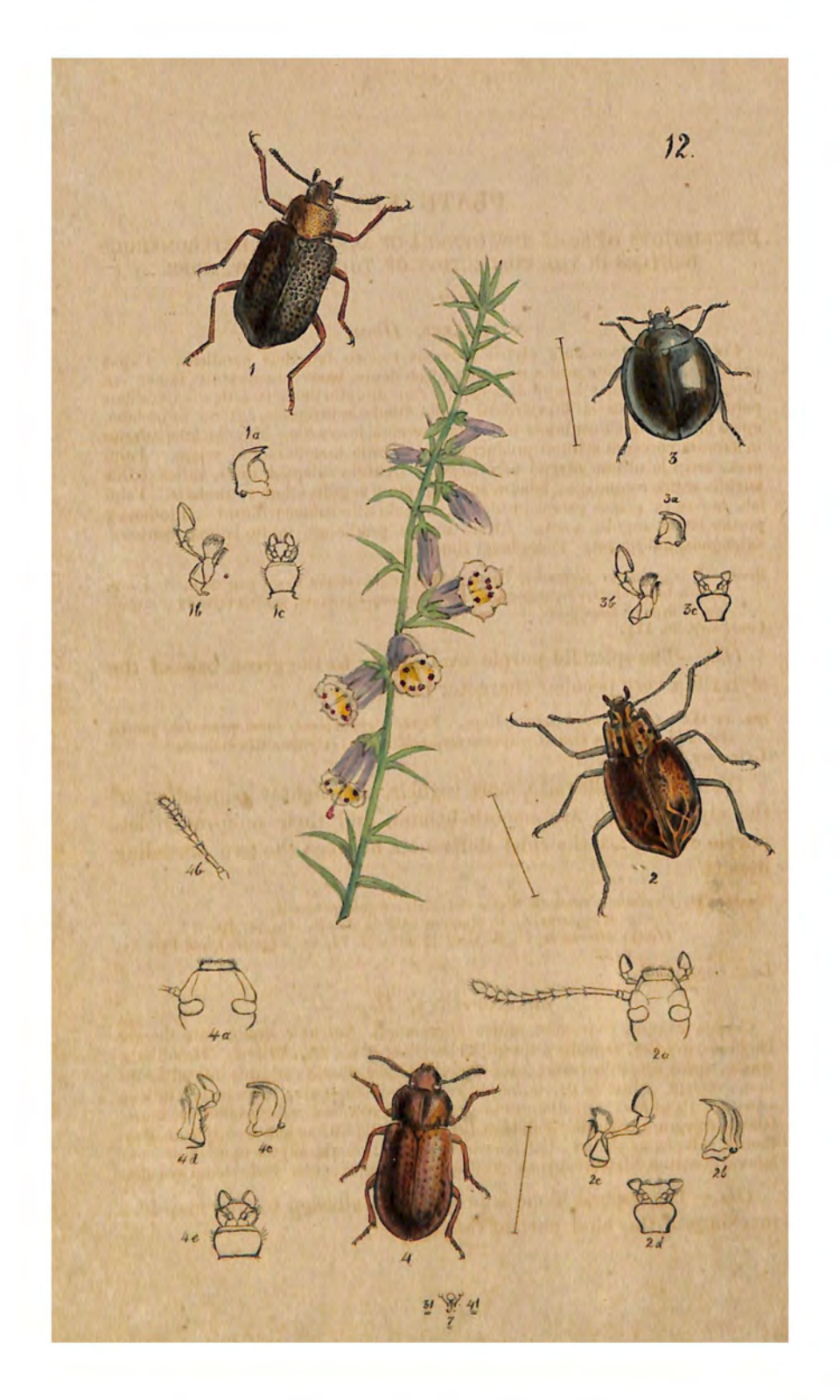
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PLATE XII.

DESCRIPTIONS OF SOME NEW GENERA OF AUSTRALIAN HETEROMEROUS BEETLES IN THE COLLECTION OF THE REV. F. W. HOPE.

CYPHALEUS, *Hope.*

Corpus oblongo-ovatum, elytris convexis rugosis lateribus parallelis. Caput mediocre, clypeo ante oculos utrinque prominente, basin antennarum tamen vix obtegente. Antennæ longitudine capitis cum dimidio thoracis, articulis apicalibus parum crassioribus et brevioribus. Mandibulæ subtrigonæ, externe rotundatæ, apice bifidæ, intus membrana in cavitate recepta, instructæ. Maxillæ lobo interno in hamum corneum acutum producto, lobo externo magno inermi setoso. Palpi max. articulo ultimo magno securiformi. Mentum subquadratum, antice latius angulis antice rotundatis: labium subquadratum angulis etiam rotundatis. Palpi lab. breves, in scapos parvos insidentes, articulo 3tio subsecuriformi. Prothorax postice latior, angulis acutis. Elytra magna, prothorace multo latiora, convexa, valde punctato-rugosa. Pedes longi simplices.

Species I. *Cyphaleus formosus*, Hope. Niger, nigro-setosus, supra punctatus, elytrorum dimidio basali viridi, purpureo cincto, apice violaceo-nigricante, punctis elytrorum majoribus, et sæpe confluentibus.
Long. corp. lin. 11¼.

Obs.—The splendid purple oval edging to the green base of the elytra is a very peculiar character in this insect.

Species II. *Cyphaleus iopterus*, Hope. Niger, nigro-setosus, supra punctatus, punctis elytrorum majoribus distinctis, apicem versus obliteratis; elytris nitide violaceis.
Long. corp. lin. 10.

Obs.—The smaller size, more regular, and slighter punctation of the elytra, which are smooth behind, and their uniform violet-purple colour, are the chief differences between the two preceding insects.

Species III. *Cyphaleus rugosus*. Totus ater, elytris rugoso-punctatis.
Helops? rugosus, G. R. Gray, in Griffith, An. K. Ins. pl. 80, f. 5.
Helops aterrimus, G. R. Gray in ditto, pl. 74, fig. 5 (details), and Part 31, p. 22.
Long. corp. lin. 11.

CHARTOPTERYX, *Hope.*

Corpus ovatum convexum, antice attenuatum. Antennæ capite cum thorace longiores, graciles, articulis 4 apicalibus brevibus et vix crassioribus. Mandibulæ crassæ, apice acutæ, curvatæ, intus apicem bifidæ, spatio marginis interni membrana repleto. Maxillæ parvæ, lobo interno apice hamo parvo acuto corneo inflexo armato. Palpi max. articulo ultimo securiformi, mentum subcordato-truncatum, labium integrum ciliatum. Palpi lab. breves, articulo ultimo sub-securiformi. Prothorax sub-planus postice latior, lateribus rectis marginatis, Elytra basi vix pronoto latiora, gradatim dilatata convexa, postice areolata, apice acuto. Pedes longi graciles.

Obs.—The generic name is proposed in allusion to the map-like markings of the hind part of the elytra.

Species I. *Chartopteryx Childrenii*, Hope. Æneo-niger nitidus, capite thoraceque tenuissime punctatis villoso-lineatis, elytris magis æneis punctatis, parte postica in areas læves chalybæas formæ variæ lineis punctatissimis et villosis divisa.
Long. corp. lin. 8.

HEMICYCLUS, *Hope.*

Corpus hæmisphericum, marginatum, glabrum; Cassidas varias simulans. Antennæ capite cum thorace vix longiores, articulis 5 terminalibus brevioribus et parum dilatatis. Mandibulæ, maxillæ, palpi et instrumenta labialia ut in genere præcedente. Pronotum lunatum postice multo latior, lateribus fere rectis, angulis parum rotundatis. Elytra maximæ fere rotundata, marginata, gibbosa, glaberrima. Pedes longitudine mediocres, graciles, simplices, tarsis angustis, articulis subtus productis.

Obs.—This genus, although so different in form, is more nearly allied to the preceding than to Helæus, or the hemispheric metallic Diaperidæ.

Species I. *Hemicyclus grandis*, Hope. Æneo-niger, nitidissimus, capitis parte postica sub lente punctata; elytris metallicis, dorso purpurascente, lateribus magis virescenti-nitidis; pedibus antennisque nigris.
Long. corp. lin. 7½.

Species II. *Hemicyclus metallicus*, Hope. Niger, nitidissimus, elytrorum dorso purpureo-nitido, tarsis quatuor anticis subdilatatis. An mas præcedentis?
Long. corp. lin. 5½.

LEPISPILUS, *Hope.*

Corpus oblongo-ovatum, squamoso-punctatum. Antennæ prothorace longiores, articulis quaque ultimis crassioribus brevioribus. Mandibulæ crassæ, apice in dentem obtusum terminato, intus membrana ciliata instructæ. Maxillæ lobo interno haud unco corneo instructæ. Palpi max. articulo ultimo vix securiformi. Mentum transversum lateribus rotundatis ciliatis. Labium integrum; palpi lab. articulo ultimo securiformi. Prothorax transversus, lateribus rotundatis, angulis posticis acutis, dorso longitudinaliter canalicalutus. Elytra elongato-ovata, punctis majoribus sed parum impressis et villosis. Pedes mediocres, simplices, tibiis parum curvatis, unguibus longis.

Species I. *Lepispilus sulcicollis*, Hope. Niger, elytris magis brunneo-purpureis, albo-villosis maculaque majori in medio marginis lateralis ejusdem coloris; capite thoraceque punctatis, hoc impressionibus duabus versus angulos posticos, lineaque impressa media longitudinali.
Long. corp. lin. 7.

Obs.—This insect is probably identical with the Helops à corselet sillonné of Boisduval, in the Voyage de l'Astrolable Col. pl. 7, fig. 5, but the figures in that work are so execrable, that it is impossible to determine the species with precision.

Obs.—The four genera above described belong to the great family Helopidæ, and are here published with the view of affording materials towards a revision of that group.

The plant figured in the plate is Australian Epacris nivalis.

ENTOMOLOGICAL INTELLIGENCE, NOTICES OF NEW WORKS, &c.

(No. III.)

Zoological Works Published under Government Patronage.

In no one particular do we find the great distinction between England and the Continental nations more strikingly illustrated than in the publication of works of science, and particularly upon Natural History. In England all our finest works have been produced either at the cost of individuals, whose purse-strings have been opened with a liberal hand by their zeal for the science—witness Mr. Lambert's magnificent work on the genus Pinus, the Lepidoptera of Georgia of Abbot and Smith, the Exotic Insects of Drury, the Malacostraca Podopthalma of Dr. Leach—or by the spirited exertions of publishers, as in the case of the Translation of the Animal Kingdom by Griffith, the splendid works on Ornithology by Mr. Gould, or the works on British Entomology by Messrs. Curtis and Stephens. With very few exceptions government has afforded no assistance to the publication of such works. On the Continent, however, the case is entirely reversed, the finest works having been produced under the auspices of the respective governments of the countries in which they have been published.

That the direction unquestionably given to the public mind in such countries by the course of public education, must have a material effect in producing such a result, is unquestionable; nor can we expect that the case will be altered here until physical science in general, including Natural History as a necessary branch, is fostered by the State for her own sake, independent of the shop-keeping spirit of the country, and is insisted upon as a branch of public education as material as the Classics, Mathematics, &c. *

* Since the publication of the last number of this work I have had the pleasure of visiting Oxford, in company with Professor Burmeister; but how can I explain the mingled feelings I experienced at being compelled to answer his question, "Who is the Professor of Zoology here?" by informing him that there was no such Professorship in this, the most magnificent University in the world—in more forcible language than was employed by Mr. MacLeay upon this very subject twenty years ago?

"Unfortunately in those classic scenes which derive no small portion of their fame from a Ray and a Lister, the existence of Zoology as a science is in these days scarcely suspected. Well may the foreigner who beholds our learned establishments so splendidly endowed, note, among the most remarkable circumstances attending them, that in none whatever should there be a Zoological chair. It is not for me to enter into the causes of this, else it were desirable to know why plants should have been deemed worthy of attention, while animals have

It may indeed be urged that the taste for such pursuits in the minds of persons in authority may have in some degree contributed to such a result, but it appears to me that it is quite independent of such consideration. How, in fact, were it not so, can we account for the non-publication of such works in this country, when it is well known that the Royal Family are and have long been interested in these pursuits, the Princess Charlotte, for instance, having possessed a cabinet of exotic insects, and her present Majesty as well as her Consort being understood to have a strong predilection for Natural History.

It will be sufficient to prove the correctness of these observations, to mention a few of the works published under the direction of Continental States, which throw into deep shade all that the government of this country has ever aided in producing.

The great work on Egypt, undertaken by the direction of Napoleon, would alone be a "monumentum ære perennius." Its magnificent plates (of which those of the Annulose animals are perhaps the most elaborate, and which cost the eye-sight of the inimitable Savigny) are on a par with all the undertakings of the gigantic-minded Emperor. More recently, under the auspices of the present King and his government, we have the Expédition scientifique de Morée, the Voyage de la Coquille, those of the Astrolabe, of D'Orbigny, and others, each of which surpasses any of the government Natural History works of this country.

In Prussia may be mentioned the splendid Symbolæ Physicæ of Ehrenberg and Hemprich, the insects of which were edited by

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been utterly neglected. I can only acknowledge with regret that such has been the case. If it be said that lectures on natural affinities are included in some course of comparative anatomy, I am truly glad to hear it; but if it be urged that the knowledge of comparative anatomy implies that of the animal kingdom, I deny it totally, since comparative anatomy is only the instrument of Zoology; and while no man can be versed in natural affinities without some acquaintance with comparative anatomy, examples may easily be specified of comparative anatomists who know nothing of natural history. *A Professorship of Natural History is necessarily charged with duties that give ample employment in Paris to thirteen professors with their numerous assistants.* [Since this was written another professorship has been established for the investigation of the Annulose animals in particular.] I have ventured to give this humiliating picture of the state of Zoological instruction in Great Britain, because there are persons who affect surprise that in that science which relates to the animated works of God, France should be the predecessor over a nation comparatively more religious."—Horæ Entomologicæ, p. 457.

Entertaining as I do the opinion that other and far higher considerations are involved in the study of Zoology than the elucidation of natural affinities, I cannot discover the slightest shadow of reason why Zoology should be neglected where Botany, Geology, and Comparative Anatomy are introduced. The very notion of such an arrangement is ridiculous, even in the truly English *cui bono* view of the question.

If the establishment of such a professorship rests with the Universities, and does not depend upon private endowment, it behoves the Zoologists of the country to bring the subject in a proper manner before the Senatus Academicus.

Dr. Klug; and in Russia, the Oryctographie du Gouvernement de Moscou, the Entomology of the Trans-Caucasian Regions, and of the Embassy to North China.

It is not, however, in these great states alone that we find this fostering care of science, for the national works undertaken by the Dutch are not behind the majority of those mentioned above. The Fauna Japonica of Siebold, assisted by Temminck, Schlegel and De Haan, "jussu et auspiciis superiorum qui summum in India Batava imperium tenent," would do honour to any country. And we have now the commencement of a similar work on the Natural History of the Dutch Settlements in India, in large folio; the third part of which is devoted to a complete illustration of the Indian species of the modern genus Papilio, occupying nine plates, with descriptions by De Haan. The title of the work is as follows:

Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche overzeesche bezittingen door de laden der Natuurkundige Commissie in Oost-Indie en andere Schrijvens.—Leiden, 1840.

In addition to illustrations of numerous previously-described species, of which various beautiful varieties are represented, one plate is devoted to an elaborate series of anatomical details of the genera composing the modern family Papilionidæ, in which we find the characters afforded by the variations in the male organs of generation, and the veining of the wings, to be extensively employed. There is also a considerable number of new species figured, one of which is closely allied to the splendid Priamus, which it even exceeds in beauty.

Having illustrated in the present number of this work two new additional species of Papilio from the same quarter of the globe, I thought it a fit opportunity to notice this new work, which adds fresh fame to the name of its talented author, whilst the circumstances under which it has appeared naturally led to the foregoing remarks.

The Entomologist, conducted by Edward Newman, F.L.S., &c., Nos. 1 to 8, 8vo. January—June, 1841. London, Van Voorst.

This work may be considered as a continuation of the Entomological Magazine. It consists for the most part of a series of papers by the editor, in which a great number of new genera and species of Longicorn Coleoptera, various American Hispæ, and Cryptocephali, and a number of Australian Cleridæ and Brachinidæ are too concisely described. A paper with descriptions of some very interesting

Bombycidæ, by Mr. Doubleday, with an outline plate engraved by W. Raddon, Esq., from original drawings by Abbot, and a memoir on the Aulacidæ, and some allied Hymenoptera by Mr. Shuckard, are also introduced. Abstracts are also given of the Volume of Insects in the Cabinet Cyclopædia; the transactions of the Entomological Society, the Annals of Natural History, the Canadian Naturalist, and of the first number of this work. A number of short communications of minor importance are also introduced, as well as a few woodcuts; and in each of the two last numbers is given an outline plate of various genera of Chalcididæ, described in the Entomological Magazine.

Investigation of the Myriapoda.—This long-neglected but highly curious group of Annulose animals has recently received much attention by Dr. Brandt of Petersburgh, and M. Gervais of Paris. In our own country, Mr. G. Newport has also undertaken their investigation, and it is with great pleasure that I mention that a paper by him upon the development and growth of the large English Iulus has been selected by the Royal Society for the Bakerian lecture of the present year; and that an elaborate memoir by him on the entire group, with copious illustrations, may shortly be expected.

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PLATES XIII. AND XIV.

SYNOPSIS OF THE DIPTEROUS FAMILY MIDASIDÆ, WITH DESCRIPTIONS OF NUMEROUS NEW SPECIES.

This family, having for its type the genus Midas*, comprises some of the most gigantic species of Dipterous insects, remarkable for the great elongation of the antennæ, the dark or coloured wings in many of the species, and occasionally the metallic appearance of the body; in all which respects we find a singular analogy to the gigantic Sphegidæ belonging to the tribe of fossorial Hymenoptera, which inhabit the same regions as are frequented by the Midasidæ.

The antennæ, which in some species are nearly as long as the thorax, appear in reality to be formed of only four joints, the third being occasionally bi- or tri-annulate, and the fourth sometimes biannulate; so that, as in M. lusitanicus (Meig. vol. 6, t. 66, f. 2), the antennæ appear seven-jointed. If the minute, and, indeed, often obsolete, style at the extremity of the antennæ be taken into consideration, we have a five-jointed antenna analogous to that of Dasypogon, &c.

Much confusion exists in the works of Dipterologists as to the structure of the mouth, and Macquart acknowledges his inability to determine its structure, by observing which, he had hoped to have determined the real situation of this anomalous group. I have been more fortunate, and having extracted the different parts, have represented them in pl. 13, fig. *a*—*e*. The proboscis is terminated by two large lips, and the haustellum consists of a labrum, long, slender, channelled beneath, and notched at the tip (*d*), inclosing beneath a short acute seta or lingua (*c*); a little in advance of the base of the labrum arises a pair of slender curved setæ, which Fabricius evidently regarded as palpi, but which I consider as the analogues of the maxillæ of the Asilidæ, and as destitute of palpi. Latreille indeed adds, "Palpi brevissimi?" (Gen. Cr. 4. 294); but I have seen nothing of them. If we regard them as palpi, we have a mouth analogous to that of the Muscidæ, whilst it is evident from the remainder of the characters of the group that the Midasidæ really belong to the Tanystomatous division of the order.

* I have adopted the orthography of the generic name Midas, given by Wiedemann (in his monograph in the Nova Acta, vol. xv. pt. 2), in correction of the Fabrician name Mydas, the term being evidently proposed in allusion to the long-eared King Midas.

We find an almost identical arrangement of the veins of the wings exhibited by this group and by Nemestrina amongst the Anthracidæ *.

Olivier, evidently from personal observation of the species which he found in Egypt, thus describes their habits, which resemble those of Asilus and Dasypogon. "Ils vivent de rapine et font une guerre continuelle aux autres insectes, qu'ils attrapent en volant, et dont ils retirent tous les sucs au moyen de leur trompe. On les voit attaquer les Hyménoptères les plus fortes et les mieux armés, et les emporter entre leurs longues pattes, sans que l'aiguillon de ceux-ci puisse les atteindre. Leurs larves nous sont inconnues."

To this account I am able to add, from information given to me by Mr. MacLeay, that the larvæ of M. tricolor (which he observed in Cuba) are parasitic upon the larvæ of the giant Prionidæ.

Wiedemann described all the species known to him under the genus Midas; but Latreille separated from them a sub-genus, having the proboscis long and porrected, named Cephalocera; and Macquart added a third, Rhopalia, differing only in the alteration in the veining of the wings and the thickened mass at the extremity of the antennæ. If, however, this be admitted, it will become necessary to form another for my M. auripennis, which would, I consider, be unnatural. Six years ago I described another genus from Australia, which I refer to this family, on account of the similarity in the veining of its wings, although it is perhaps doubtful whether it is not more nearly related to the Nemestrinides.

Genus MIDAS, *Wied.* (Mydas, *Fabr.*)

Species I.—*M. heros*, Perty. (Del. Anim. Art. Braz. t. 36, f. 11.) Ater, antennis ferrugineis, abdominis segmento 1mo sulphureo-hirto, alis antice testaceis costa et venis fusco-nigris. Long. lin. 26. Expans. alar. lin. 42. Brasilia.

Species II.—*M. giganteus*, Thunberg. (Sw. Trans. 1818, p. 246, Wied. Mon. Mid. tab. 52, fig. 1, ♂ ♀.) Ater, thorace vittis dilutioribus; abdomine ♂ chalybæo, ♀ vix cærulescente; alis in ♂ cothurnatis vel fuscanis, in ♀ nigris; margine interno apiceque fuscano-flavidis. Long. corp. lin. 15—18 ♂, 20 ♀. Brasilia.

Obs. 1.—*M. cærulescens*, Oliv. Enc. Méth. 8, p. 81, is regarded by Wiedemann as identical with the male of this species. Olivier, however, says, "L'abdomen est d'un bleu très-brillant," which will scarcely agree with it. The Rev. F. W. Hope possesses a variety of the male with the abdomen black, and the front margin of the wings pale brown, scarcely darker than the hind margin.

Species III.—*M. dives*, Westw. n. sp. Pl. 13, fig. 1. Niger, thorace vittis cinerascentibus, abdominis segmento 1mo aureo piloso, 2do aureo-sericanti, reliquis læte purpureo-cæruleis; antennis, articulis 2us basalibus exceptis, alisque fulvis, harum basi obscuriori margineque postico translucente, pedibus longis ♀. Long. corp. lin. 18. Exp. alar. unc. $3\frac{1}{6}$. In Mus. D. Hope.

* Latreille refers to Pangonia, but evidently in mistake for Nemestrina (R. A. 5. 480).

Species IV.—*M. rubidapex*, Wied. (Mon. Mid. pl. 52, f. 2.) Niger antennis apice rubris alis rubido-flavis extrema basi nigris. Long. lin. 17—19. Mexico.

Species V.—*M. mystaceus*, Wied. (Mon. Mid. pl. 52, f. 3.) Ater antennis rubidis, epistomate utrinque albo-piloso ♂. Long. lin. 16. Surinam.

Species VI.—*M. annulicornis*, Westw. n. sp. Pl. 13, fig. 2. Niger barba epistomatis nigra, antennis (nisi articulis 2bus basalibus) fulvo-rubris, annulo nigro ad apicem articuli 3tii; thorace vix cinereo vittato, abdominis segmento 2do nigro-viridescenti, 3bus ultimis nigro-cærulescentibus. Alis fusco-nigricantibus, basi venis obscurioribus, margine postico pallidius infumato ♀. Long. corp. lin. 16. Exp. alar. 2 unc. 8 lin.
Habitat in Brasilia. Mus. D. Miers.

Species VII.—*M. Bonariensis*, Serville, Guér. Icon. R. An. Ins. pl. 97, f. 5. (Buenos Ayres.)

The description of this species has not yet been published.

Species VIII.—*M. nitidulus*, Oliv. (Enc. Méth. 8, p. 83. Wied. Mon. Mid. pl. 52, f. 4.) Thorace nigro albido-vittato; abdomine subcupreo, utrinque viridi-aureis maculis, alis translucidis fusco nonnihil ad costam tinctis. Long. lin. 16.
(Syn. *M. nitida*. Lichtenst. Mus. Holthuys. p. 213).

Species IX.—*M. crassipes*, Westw. n. sp. Pl. 13, f. 3. Totus niger, thorace abdomineque nitidis, antennis brevioribus, pedibus brevibus femoribus posticis incrassatis dentatis, alis subpellucidis, vena 3tia longitudinali apiceque fusco tinctis. ♀. Long. corp. lin. 16. Exp. alar. 2¼ unc.
Habitat in America septentr.? Mus. Hope, e Mus. Children.

Species X.—*M. tricolor*, Wied. (Mon. Mid. pl. 53, f. 5.) Thorace femoribusque posticis rubidis; epistomate aurato: abdomine chalybæo. Long. corp. lin. 13 ♀.
Habitat in insula Cuba.

Species XI.—*M. tibialis*, Wied. (Mon. Mid. pl. 53, fig. 6.) Niger tibiis tarsisque flavis alis fuscanis. Long. lin. 13. ♂. Ex Baltimore.

Species XII.—*M. politus*, Wied. (Mon. Mid. pl. 53, f. 7.) Thorace nigro glabro, abdomine cupreo; alis nigris, pedibus ferruginosis. Long. lin. 13. ♀.
Habitat—?

Species XIII.—*M. auripennis*, Westw. (in Lond. and Edinb. Phil. Mag. April, 1835), Pl. 14, fig. 1. Niger, capite, antennis, collo, angulis anticis thoracis, abdomine (segmento basali marginibusque 3tii segmenti supra et segmentis tribus intermediis subtus) pedibusque (nisi femoribus ad basin) læte fulvis; alis auricoloribus macula versus apicem costæ nigra margineque interno pellucido; mesosterni lateribus unispinosis. Long. corp. lin. 11. Expans. alar. lin. 19.
Habitat in Nova Hollandia. Mus. Hope et nostr.

Obs.—The veins of the wings in this species differ from those of all the others, the anterior branch of the fourth longitudinal vein dividing and forming a small closed oval cell (appendiculated at its extremity, but wanting the small oblique appendiculated vein at its base above) near the apex of the wing, whilst the long closed cell near the middle of the hind margin is not pedunculated at the extremity most distant from the body, as in almost every other species.

Species XIV.—*M. clavatus*. Niger, abdominis segmento 2do aurantiaco; alis nigris. Long. lin. 10—12.
Habit in Amer. Borcali.
Syn. *Musca clavata*, Drury. Ill. vol. 1, pl. 44, f. 1. App. vol. 2 (1773).
Nemotelus asiloides, De Geer, Mem. v. 6, t. 29, f. 6.
Bibio filata, Fabr. Mantissa, Ins. ii. p. 328. 1. (1787.)
Mydas f., Fabr. Syst. Antl. Midas f. Wied. Mon. Mid. pl. 53, f. 8.
Bibio illucens, Fabricius. Syst. Ent. 756. 1.

Species XV.—*M. atratus*, Macq. (Dipt. Exot. t. 1, pars 2, p. 11.) Niger, abdomine depresso ♀, segmento ultimo supra macula rufescenti, alis fuscis venis obscurius marginatis. Long. corp. 11 lin. ♂ ♀.
Habitat—? An var. præcedentis?

Species XVI.—*M. brevicornis*, Wied. (Mon. Mid. pl. 53, f. 9.) Niger, politus abdominis segmentis 3, 4, flavido-diaphanis. Long. lin. 11. ♀.
Habitat in Brasilia.

Obs. 1.—Cellula media marginis postici ramum nullum ad marginem posticum currentem emittit.

Obs. 2.—*M. iopterus*, Wied. Auss. Zw. Ins. 1. 241. 4. Var. differt segmentis 3, 4 abdominis utrinque macula parva subquadrata flavida notatis et alis ubique fuscis chalybæo resplendentibus.

Species XVII.—*M. leucops*, Wied. (Mon. Mid. pl. 53, f. 10.) Thorace nigro, vittis epistomateque albopilosis, abdomine chalybæo, alis sinuato-fuscano-flavis. Long. lin. 11 ♂.
Habitat in Brasilia.

Species XVIII.—*M. gracilis*, Macq. (Hist. Nat. Ins. Dipt. 1, p. 274, pl. 7, fig. 1.) Niger, barba et frontis lateribus albidis aut flavidis, thorace lineis 4 albis, intermediis duabus antice paullo dilatatis, vitta nigra dorsali velutina, lateralibus duabus lævibus brunneis, metathorace maculis duabus albis, abdomine violacco metallico segmento 1mo nigro albopiloso reliquis fulvo tenuiter marginatis, pedibus nigris femoribus tibiisque posticis obscure testaceis, alis brunnescentibus. ♂ ♀. Long. corp. lin. 10.
Habitat in America meridionali.

Species XIX.—*M. ruficornis*, Wied. (Mon. Mid. pl. 53, fig. 11.) Niger thorace antice melleo-fuscano, antennis ferrugineis alis fuscis. Long. lin. 9. Ex Tranquebar.

Species XX.—*M. interruptus*, Wied. (Mon. Mid. pl. 53, f. 12. ♂ ♀.) Niger, abdomine fasciis tribus flavis; 1ma utrinque interrupta. Long. lin. 9—10. ♂ ♀.
Habitat in Mexico.

Species XXI.—*M. senilis*, Westw. n. sp. Totus niger griseo-setosus, barba epistomatis grisea alis fuscanis costa magis fulvescenti venis posticis fusco-marginatis, cellula media versus marginem posticum venam brevem ad marginem currentem haud emittenti. Long. corp. lin. 6. Expans. alar. lin. 16.
Habitat in Mexico. Tacubaya nostr. D. Coffin. Mus. West.

Species XXII.—*M. viduatus*, Westw. (in Lond. and Edinb. Phil. Mag., April 1835), Pl. 14, fig. 2. Niger, faciei et thoracis lateribus maculaque triangulari ad basin segmentorum 3 et 4 abdominis sericie argentea obsitis, alis pallidis in medio fuscantibus, venis fusco marginatis. Long. corp. lin. 10. Exp. alar. lin. 16.
Habitat in Nova Hollandia. Mus. nostr.

Obs.—In this, and the two other Australian species of this genus described below, the fifth longitudinal vein extends to the costa a little before the extremity of the wing, instead of joining the extremity of the second longitudinal vein; moreover the long closed middle cell near the hind margin of the wing is not appendiculated (or petiolated) at its extremity most remote from the body, but extends to the next cell, which runs to the tip of the wing.

Species XXIII.—*M. fulvifrons*, Illiger. (Wied. Mon. Mid. pl. 53, fig. 13.) Niger, abdominis medio flavo, epistomate fulvo-hirto, antennis nigris, clava rubiginosa, alis saturate flavidis, pedibus nigris, tibiis subrubido-fuscis. Long. lin. 9½.
Habitat in Georgia Americana.

Obs.—In the collection of drawings of Georgian insects, made by Abbot in the library of the British Museum *, are two figures; one of which I consider to represent this insect. It is numbered 65, and represents the first segment of the abdomen as black; the 2nd, 3rd, and 4th, fulvous with a pale hind margin; the 5th with a fulvous margin alone; the remaining segments black.

* Vol. 13, Diptera, Catalogue mark 7956, Plutarch 126 E.

Species XXIV.—*M. pachygaster*, Westw. n. sp. (pl. 13, fig. 4.) Rubiginosus, antennarum articulo 3tio fulvo, 4to nigricanti, oculis nigris intus sericio albicanti marginatis; thoracis dorso nigro vittato, abdomine thorace latiori, segmento 1mo et ultimo fulvescentibus, 1mo basi obscuro, intermediis nigris margine tenui postico flavo, pedibus rubiginosis; alis fuscantibus ad costam melleo tinctis venis obscurius marginatis. ♀ Long. corp. lin. 9½. Expans. alar. lin. 20.

Habitat in Georgia Americana. In Mus. D. Hope.

Species XXV.—*M. basalis*, Westw. n. sp. Niger, facie fulva, antennis nigris, articulis duobus basalibus fulvis, thoracis dorso obscure ferruginoso vitta media nigra, abdomine crasso segmentis 2—7 flavo marginatis, pedibus fulvis, coxis femoribusque 4 anticis basi nigris, alis flavido-fuscanis, venis fulvis. ♀. Long. corp. lin. 11. Expans. alar. lin. 20.

Habitat in Mexico. Tacubaya. D. Coffin. Mus. nostr.

Obs.—The middle cell near the hind margin of the wing does not emit the short transverse vein running to the margin.

Species XXVI.—*M. maculiventris*, Westw. (in Lond. and Edinb. Phil. Mag. June 1835, Pl. 13, fig. 5). Obscurè niger; abdomine testaceo fuscanti; segmentis apice pallidis et (nisi segmentis duobus basalibus) macula triangulari nigra in medio notatis, his maculis versus apicem abdominis magnitudine crescentibus, segmento anali fusco; abdomine toto subtus concolori; alis flavido-fuscantibus, venis in parte postica obscurius marginatis; epistomate nigro hirto, pedibus picco-nigris.

Long. corp. lin. 11. Expans. alar. lin. 19. Habitat in Georgia Americana. Mus. Hope et nostr.

Obs.—Abbot's drawings of Diptera, No. 66, represents a probable variety of this species, in which the second segment of the abdomen has the sides and hind margin (except in the centre, where the band is interrupted) fulvous-coloured; the third segment has also a subapical fascia interrupted in the middle of the same colour.

Species XXVII.—*M. incisus*, Macquart (Dipt. Exot. Nouv. v. 1, pt. ii. p. 11, pl. 1, fig. 1). Niger, abdomine incisuris flavis, segmento basali omnino nigro, alis fuscis, cellulis 4 posticis. Long. corp. lin. 9.

Habitat Carolina.

Species XXVIII.—*M. parvulus*, Westw. n. sp. (Pl. 13, fig. 6). Obscure fulvus, antennis nigricantibus, basi sublutois, oculis nigris intus sericio alba marginatis, thorace vittis 4 nigricantibus, 2bus lateralibus antice, intermediis 2 postice, abbreviatis; abdomine flavo, nitido punctato, segmentis 2do et sequentibus nigro fasciatis, fasciis in segmentis posticis multo latioribus, pedibus fulvis, alis fuscanis costa magis lutescenti. Long. corp. lin. 6½. Expans. alar. lin. 11.

Habitat in America Septentr. D. Doubleday. Mus. Newman.

Species XXIX.—*M. apicalis*, Wied. (Mon. Mid. pl. 53, fig. 14.) Niger, abdomine chalybeo, medio nigro, antennis apice rubris, alis sinuato nigris, margine interno flavido ♂. Long. corp. lin. 9.

Habitat in Brasilia.

Species XXX.—*M. virgatus*, Wied. (Mon. Mid. pl. 54, fig. 19.) Niger, thorace vittis albo micantibus, alis infumatis. Long. lin. 7½.

Habitat in Brasilia.

Species XXXI.—*M. stenogaster*, Westw. n. sp. (Pl. 14, fig. 3). Niger, albido setosus, facie barba densa albida obsita, thorace maculis duabus parvis in margine antico albo squamosis, alterisque duabus versus basin alarum, abdomine valde elongato, segmento antico albo-piloso, 2do nigro, 3tio obscure rufo, lateribus nigris albo maculatis; cæteris sanguineis, singulo ad basin utrinque macula parva alba; pedibus picco sanguineis; alis subhyalinis. Long. corp. lin. 9. Expans. alar. lin. 13.

Habitat Swan River, Australasia. Mus. Hope.

Obs.—The veins of the wings of this species agree with those of M. viduatus.

Species XXXII.—*M. bicolor*, Westw. n. sp. (Pl. 14, fig. 2). Niger, albo-pilosus, facie barba densa albida, abdomine segmentis 5 posticis, pedibusque sanguineo-rufis, tarsis paullo obscurioribus, alis hyalinis, venis flavido-fuscanti marginatis. Long. corp. lin. 9½. Expans. alar. lin. 16.

Habitat in Australasia Occidentali. Mus. Hope.

Obs.—The veins of the wings are arranged in the same manner as in the last species.

Species XXXIII.—*M. lusitanicus*, Wied. (in Meig. Syst. Beschr. 2, 130, and 6, pl. 66, fig. 1, 2; and in Mon. Mid. pl. 54, fig. 18 ♂ ♀.) Niger, thorace albo-vittato, abdomine albo annulato, in ♂ nigro, in ♀ luteo; alis flavidis, pedibus nigris. Long. lin. 8, 9.
Habitat in Lusitania.

Species XXXIV.—*M. cinctus*, Macq. (Hist. Nat. Dipt. 2, p. 655, pl. 24, fig. 19). Obscure niger, facie et fronte albido-pilosis. Antennis nigris, thorace vittis 4 griseo—villosis, lateralibus subtus fulvis, parapteris fulvis, lateribus testaceis, sterno nigricanti, scutello minuto testaceo, abdomine cylindrico, segmentis fulvo-marginatis lateribus fulvis, singuli disco fascia nigra angusta abbreviata, pedibus fulvis, femoribus posticis subclavatis, apice brunneis, subtus duplici serie spinarum brevium armatis, tibiis etiam breviter spinosis. Long. corp. lin. 8½.
Habitat Algeria, Oran.

Species XXXV.—*M. rufipes*, Westw. n. sp. Fusco-niger, segmento basali abdominis nigro, cæteris fulvis, apice subfusco, alis fuscis; pedibus fusco-rufis, antennis vix capite longioribus. Magnitudo Rhagionis scolopacei.
Habitat Sicilia?

Species XXXVI.—*M. notospilus*, Wied. (Mon. Mid. pl. 54, fig. 20; Walk. in Linn. Trans. 17, 339.) Niger, thorace maculis 6 albis, abdominis fasciis pedibusque flavis. Long. lin. 7 ♀.
Habitat Monte-Video, Brasilia.

Species XXXVII.—*M. vittatus*, Wied. (Mon. Mid. pl. 54, fig. 23.) Canus, thorace vittis nigellis, abdomine brunneo, albo-fasciato, antennis nigris, pedibus brunneis, femoribus posticis haud spinosis, alis limpidissimis. Long. corp. lin. 6½ ♂.
Habitat in Nubia.

Obs. The veining of the wings in this species is similar to that of M. brevicornis; the long closed central cell which runs parallel with the hind margin of the wing, not emitting the small transverse vein from near its apex to the hind margin. The small closed discoidal cell near the extremity of the wing, is also represented (Wied. fig. 23 d) as destitute of the short oblique spur which exists in all the other species, and which is in fact figured in fig. 23, and 23 a.

Species XXXVIII.—*M. lineatus*, Olivier (Enc. Méth. tom. 8, p. 33). Niger, thorace cinereo 4-lineato, pedibus abdomineque nigricantibus, hujus segmentis albis, antennis nigris, femoribus posticis læviter spinosis vix incrassatis; alis pellucidis; venis nigris obscurius nonnihil marginatis.
Habitat in Ægypto, Sakhara; Olivier.

Obs.—I do not think Olivier's description accords sufficiently with that of M. vittatus to induce us to regard them as descriptive of the same insect. If however identical, we must employ the name of lineatus for the species, instead of Wiedemann's name vittatus.

Species XXXIX.—*M. Olivieri*, Macq. (Dipt. Exot. Nouv. t. 1, part 2, p. 12, Rhopalia O.) Niger, pedibus rufis, facie capiteque subtus albo-pilosis, antennis nigris, sericio subgrisea indutis, clava maxima, thoracis lateribus supra originem alarum testaceis. Alis subfuscis. Long. corp. lin. 4½.
Habitat in Ægypto. In Mus. Reg. Paris. Olivier. An idem cum præcedente?

Obs.—The hind tibiæ in this species terminate in two very minute spurs, scarcely visible. The wings agree with those of M. vittatus, in wanting the short appendiculated vein in the second submarginal cell, and in the absence of the short transverse vein in the middle of the hind margin.

Genus CEPHALOCERA, *Latr. Macq.*

This genus differs from the preceding not only in the length and slenderness of the porrected proboscis, but also in being generally destitute of the short transverse vein at the middle of the hind margin of the wing; the hind tibiæ also possess two minute slender spurs.

Species I. (XL.)—*C. rufithorax* (Wied. Mon. Mid. pl. 54, fig. 15, Mid. ruf.) Nigra, thorace rufo-hirto, abdominis incisuris flavidis. Long. lin. 8 ♂.
Habitat Cap. Bon. Spei.

Species II. (XLI.)—*C. Westermanni* (Wied. Mon. Mid. pl. 54, fig. 16, Mid. West.) Nigra, thorace abdominisque basi flavido-villosis; reliquo abdomine nigro hirto. Long. lin. 7½—9½ ♂ ♀.
Habitat Cap. Bon. Sp.

Species III. (XLII.)—*C. fasciatus* (Wied. Mon. Mid. pl. 54, fig. 17 ♂ ♀, Mid. f.) Nigra, thoracis hirsutie, pedibus antennarumque apice ferruginosis, alis flavis. Long. lin. 7, 8, ♂ ♀.
Habitat Cap. Bon. Sp. Mus. Hopo, nostr.

Of two specimens now before me, both from the Cape, one has the antennæ black, the tip of the club alone ferruginous, and the other has the third and fourth joints ferruginous, the tip of the club being black; in the second of these specimens the vittæ of the thorax are scarcely discernible.

Species IV. (XLIII.)—*C. longirostris* (Wied. Mon. Mid. pl. 54, fig. 21, ♂ ♀, Mid. long.) Nigra, thorace flavido vittato; abdomine fasciis albis ♂, flavis ♀; antennis nigris, clava medio rufo-flava, alis costa fasciaque longitudinali submediana nigris, femoribus posticis basi flavis, apice obscuris. Long. lin. 6½.
Habitat Promont. Bon. Spei.
Var. ♀ alis omnino brunneis, cellula 2da submarginali subaperta venaque brevis transversa in medio marginis postici adest. (Macquart l. c.)

Species V. (XLIV.)—*C. fascipennis*, Mcq. (Dipt. Exot. Nouv. t. 2, p. 13). Nigra, abdomine maculis albis ♂, pedibus rufis, alis fascia fuscana, cellula postica 1ma clausa. Long. lin. 5½ ♂.
Habitat Cap. Bon. Spei.

Species VI. (XLV.)—*C. nigra*, Macq. (Op. cit. p. 14.) Nigra, pedibus alisque fuscis, cellula postica 1ma clausa, barba alba, antennis articulo 3tio medio ferrugineo. Long. lin. 5 ♀. Habitat Cap. Bon. Spei.

Species VII. (XLVI.)—*C. callosa* (Wied. Mon. Mid. pl. 54, fig. 22 ♂ ♀. Mid. call.) Nigra, abdomine pedibusque fuscano-flavis, abdomine ♀ nigro, alis brunneis. Long. lin. 4—5.
Habitat Prom. Bon. Spei.

Species VIII. (XLVII.)—*C. maculipennis*, Westw. n. sp. (pl. 14, fig. 5.) Capite cum oculis et proboscide nigro, antennis fulvis, articulo 4to valde clavato, apice in tuberculo contracto, thorace ferrugineo, vitta lata media (supra et subtus) segmentis 1mo, 5, 6 et 7mo abdominis nigris, tribus intermediis rufis, singulo macula parva dorsali, pedibus testacco—rufis, spinis femorum posticorum nigris, alis hyalinis, lætissime iridescentibus, costa fulva, macula magna media, vittaque ad basin ducta, apiceque marginis antici nigris. Long. corp. lin. 9. Expans. alar. lin. 13½.
Habitat in Australasia Occidentali. D. Gould. Mus. Hopo.

Obs.—The veins of the wings accord with the typical species of Midas, except that the penultimate longitudinal vein extends to the costa of the wing as in M. bicolor and several other species from New Holland. The nasus is extremely prominent (fig. 5*) and the hind tibiæ terminate in a horny acute point within which are two very slender spurs.

Genus APIOCERA, *Westw.*

(Lond. and Edinb. Phil. Mag. June, 1835.)

The head is transverse, the antennæ (see plate 14, fig. 6*) shorter than the head; the first joint thick, the second minute, both clothed with long rigid setæ; the third, rather small, pear-shaped; the fourth, minute and stylate; the proboscis is exserted, as long as the head, terminated by two large lips, and furnished with two broad spatulated palpi. The thorax is oblong, the scutellum produced, the abdomen conical, smallest in the male, but terminated in that sex by a thick exserted appendage. The legs are moderately long and slender, the hind thighs small, the hind tibiæ bicalcarated, and the tarsi bipulvillate. The wing-veins are arranged nearly as in Midas; the fourth longitudinal vein is however straight, and is considerably elongated before it becomes furcate, the upper branch of this furcation not emitting the short spur-like appendiculated vein found in most of the preceding insects, but wanting in those from Egypt. The discoidal cell beyond the middle of the wing is dilated at its apex, and emits a vein which runs to the hind margin, so that in conjunction with the minute transverse vein emitted by the adjacent cell, as in most species of Midas, (but which cell is greatly reduced in size,) there are four cells along the hind margin of the wing. The sides of the thorax, scutellum, and legs are armed with long black bristles.

Species I. (XLVIII.)—*Apiocera mærens*, Westw. n. sp. (Pl. 14, fig. 6). Obscure nigra, facie corporeque subtus pilis cinereo-albis valde obsitis, thorace vitta angusta media aliisque tribus utrinque in medio disci abbreviatis cinereo-albis, abdominis segmentis 2, 3, et 4 lateribus et maculis duabus triangularibus ad marginem posticum magnitudine decrescentibus, 5toque maculis duabus basalibus, cinereo-albis, alis hyalinis, venis nigris ♀. Long. corp. lin. 10. Expans. alar. lin. 14.

Habitat in Nova Hollandia. Mus. Newman.

Species II. (XLIX.)—*Apiocera asilica*, Westw. (Lond. and Edinb. Phil. Mag. June 1835.) Nigra, vertice et thoracis lateribus piceis, palpis albidis, alarum venis nigris ♀. Long. corp. lin. 10½. Expans. alar. lin. 17.

Habitat in Nova Hollandia. Mus. nostr.

Species III. (L.)—*Apiocera fuscicollis*, Westw. (Op. cit.) Obscure fusca, thorace cinereo subvittato, palpis albidis, alarum venis internis pallidis, corpore subtus albido villoso. Expans. alar. lin. 17.

Habitat in Nova Hollandia? Mus. Hope.

Obs.—I am by no means satisfied of the specific diversity of these three insects; my specimen of A. asilica being in a very mutilated state.

Obs.—Mydas bilineata, *Fabr.*, Ent. Syst. 4, p. 253, a native of New Zealand, described from the Banksian Cabinet, and now in the collection of the Linnæan Society, is a large species of Thereva.

The orchidaceous plant figured in Plate 14, is the Australian Thelymitra Ixiodes, *Swartz;* all the insects on this plate being natives of New Holland.

15.

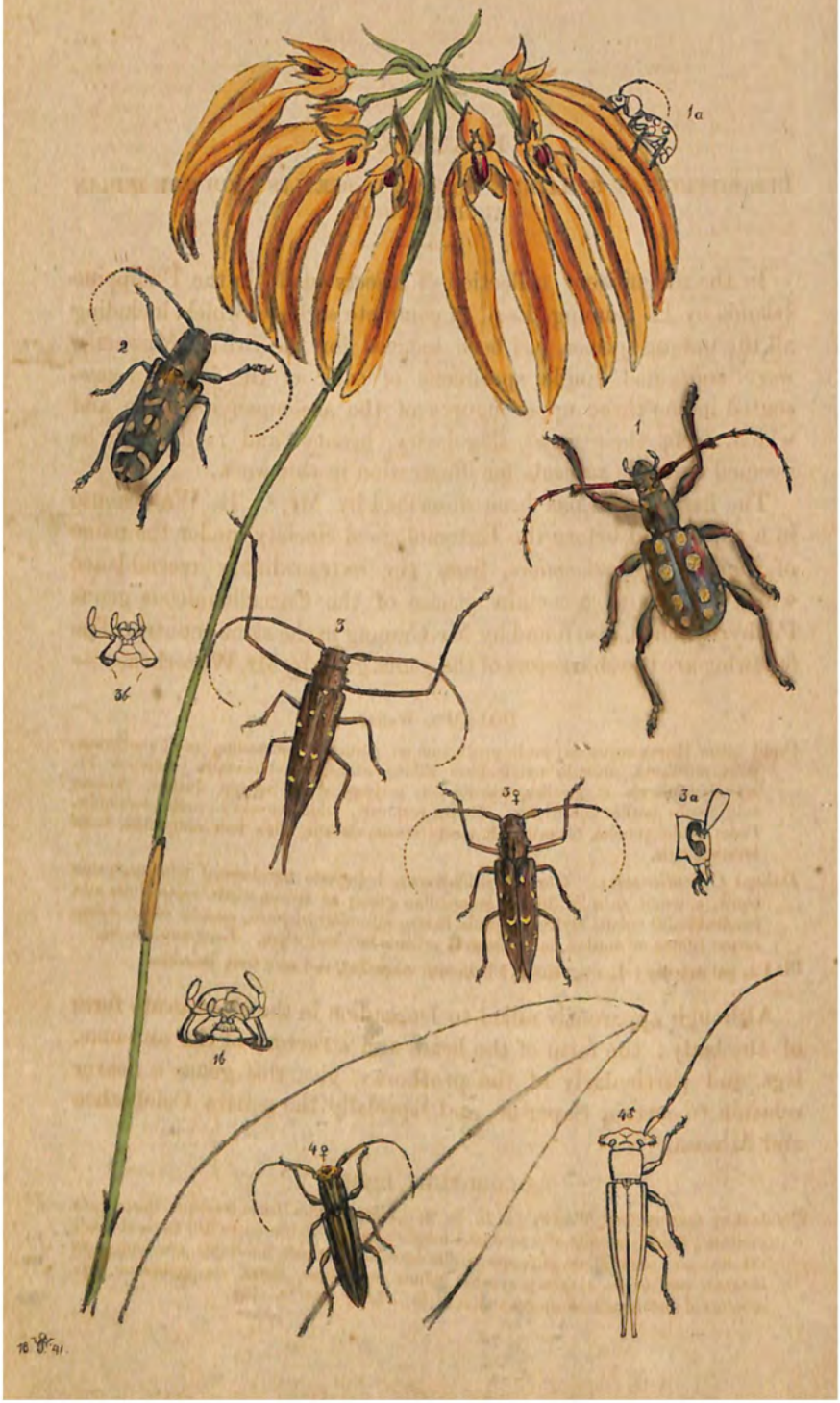

PLATE XV.

DESCRIPTIONS OF SOME NEW LONGICORN BEETLES FROM THE INDIAN ARCHIPELAGO.

In the magnificent collection of insects made in the Philippine Islands by H. Cuming, Esq., (a complete series of which, including all the unique species, has been secured for the British Museum), were contained single specimens of each of the insects represented in the three upper figures of the accompanying plate, and which, from their great singularity, beauty, and rarity, will be deemed valuable subjects for illustration in this work.

The first species has been described by Mr. G. R. Waterhouse in a paper read before the Entomological Society, under the name of Doliops *Circulionoides*, from the extraordinary resemblance which it bears to a certain species of the Curculionideous genus Pachyrhynchus, also found by Mr. Cuming in the same country. The following are the characters of the genus given by Mr. Waterhouse:—

DOLIOPS, Waterh.

Caput quam thorax angustius, paulo productum et postice cylindraceum, oculi reniformes, palpi mediocres, articulis terminalibus oblongo-ovatis, et subtruncatis. Antennæ 11-articulatæ, breves et graciles, articulo 3tio perlongo et ad apicem dilatato. Thorax subglobosus postice constrictus. Elytra perbrevia, valde convexa humeris prominulis. Pedes paulo grandes, femoribus in medio sensim clavatis, tibiis latis compressis, tarsis brevibus latis.

Doliops Curculionoides. Obscure viridi-æneus, indistincte cœrulescenti relucens, palpis nigris, antennis articulis 3tio et sequentibus griseis ad apicem nigris, capite linea alba longitudinaliti notato, elytris 14 guttis flavescenti—albis adspersis, maculis eodem colore corpus subtus ornantibus, tarsis cinereis, articulo terminali nigro. Long corp. lin. 5½.

Pl. 1 a. natural size; 1. magnified; 1 b. mouth magnified, and seen from beneath.

Although apparently allied to Dorcadion in the short ovate form of the body; the form of the head, and structure of the antennæ, legs, and particularly of the prothorax, give this genus a nearer relation to certain Saperdæ, and especially the genera Colobothea and Mesosa.

COLOBOTHEA, Dejean.

Colobothea leucospilota, Westw. pl. 15, fig. 2. Læte cœrulea aureo æneoque tincta, rude punctata, thorace macula alba in medio marginis postici, elytris guttis 10, fascia abbreviata angulata ante medium alteraque postica curvata ad suturam interrupta, albo-squamosis antennis pedibusque cyaneis; corpore subtus nigro-æneo, sterno marginibusque segmentorum abdominalium squamis albis variis. Long corp. lin. 10½.

UROCALYMMA, Westw.

Corpus gracile depressum punctatum. Caput antice perpendiculariter deflexum (fig 3 a). Antennæ gracillimæ. Prothorax subquadratus antice et postice marginatus, lateribus dente parvo in medio armatis. Elytra elongata depressa, subparallela apicem versus attenuata et in ♂ in caudas duas longas producta, apicibus in ♀ hiantibus et acuminatis. Pedes longi tenues præsertim antici maris, qui longissimi sunt, tibiisque anticis ante apicem in hoc sexu intus, 4 que posticis extus tenuissimo penicillatis. Palpi graciles breves (fig. 3 b Maxillæ et labium).

The singular insects composing this genus exhibit several characters belonging to very different groups of Longicorn beetles. The elongated fore legs are analogous to those of Acrocinus longimanus, although in their delicate structure they more nearly resemble those of Gerania Boscii; in the last-named insect, however, all the legs are elongated.

In having the tips of the elytra produced into two long tails in the supposed male, these insects are analogous to Cercoptera Banoni, *Spin.* (in *Guér.* Mag. Zool. Ins. 1839, pl. 12); and to the male of Enicodes Fichtelii, *Schreib.* (in Linn. Trans., and Griff. Anim. King. Ins. pl. 65, f. 1, and pl. 73, f. 2*); but in both these insects the thorax has not the sides armed with a spine, whence I consider that Urocalymma has a nearer relation to Tmesisternus.

Urocalymma longimana, Westw. (Pl. 15, f. 3, male; f. ♀, female). Fusco-nigricans, luteo sericans, punctata, elytris punctato-striatis, basi irregulariter punctatis, guttis 10 minutis albido-sericantibus adspersis ornatis (2bus posticis in ♂ obliteratis.) Long. corp. ♂ lin. 14, ♀ lin. 10.

The remarkable orchidaceous plant represented in the plate is the Cirrhopetalon Thouarsii (Bot. Reg. vol. xxiv. p. 11), a native of Java, Manilla, the Society Islands, &c.

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* Hitherto the male of Enicodes Fichtelii (plate 15, fig. 4 ♂.) has alone been figured and described. The Rev. F. W. Hope, however, possesses the other sex, which he obtained from the Haworthian collection, in which it was ticketed "Ind. or." although New Holland is the recorded country of the rare species in question. The female is accordingly now figured for the first time, plate 15, fig. 4 ♀. It agrees with the male in its colours, but the sides of the head are much less produced, and the elytra are not elongated into a pair of tails, although they terminate acutely.

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PLATE XVI.

ILLUSTRATIONS OF TWO HITHERTO UNFIGURED SPECIES OF PAPILIO.

Papilio Rhetenor, Westw. n. sp. (Pl. 16, fig. 1 and 1 a). Alis supra nigro-cyaneo nitidis, posticis oculo incompleto ad angulum ani albo supra rufo; subtus anticis griseis nigro striatis, basi sanguineis; posticis aterrimis margine omni anali late sanguineo nigro maculato angulo ani albo irrorato. Expans. alar. unc. 5¼.

This fine species is a native of Assam, where it was collected by Mr. Griffith, and now forms part of Mr. Solly's collection, alluded to in the last number of this work. On the upper side the wings are of a black colour, tinged with very dark blue, especially towards the outer angle of the hind wings, being there increased by a number of minute, slender, elongated, blue scales. At the anal angle is an incomplete eye, formed of a black spot, partially surrounded on the inside with a whitish crescent, the upper part of which is tinged with sanguineous. The fore wings beneath are of a grey colour, darker towards the base and along the outer edge, with the veins and intermediate longitudinal fasciæ black, the base being blood red; which colour extends broadly along the whole of the anal margin of the hind wings (except in the anal fold), marked with a black spot at the anal angle, which is much irrorated with white. The sanguineous colour in the next area of the wing is marked with three black spots, the middle one being the largest. The head and neck above are spotted with dirty white, and the antennæ and legs are black. The abdomen is wanting in the unique specimen now before me.

This species is most nearly allied to the Chinese P. Protenor, but differs in the anal eye, in the extent of the sanguineous colour along the whole anal margin of the hind wings, and in wanting the spots along the hind margin of the same wings.

Papilio Agestor, Plate 16, fig. 2. (Gray in Zool. Misc. p. 32, Boisduv. Hist. Nat. Lep. 1. p. 376.) "Alis griseis venis margineque exteriore nigris griseo punctatis; posticis corticinis disco punctato griseis." Expans. alar. 3¼, 4 unc.

This curious species is described by Mr. G. R. Gray as a native of Sumatra, but the specimen now figured was obtained from India by W. W. Saunders, Esq., F.L.S., President of the Entomological

Society. The upper wings are of a dirty greyish white colour, caused by the pale ground being entirely and thickly irrorated with minute black scales, the costa, veins, and a broad apical margin (dilated at the tip) black, the latter spotted with dirty white; the discoidal cell is marked near the tip with an oblique black bar, which extends to the black margin.

The hind wings are very slightly sinuated, the base being of a paler greyish white, gradually running into a fulvous red. Between the discoidal cell and the hind margin is a row of white spots, varying in size, the four next the outer angle being preceded and followed by patches of black atoms, forming marginal, triangular patches of dark colour. The underside of the wings is paler coloured than the upper, the tips of the fore wings being fulvous brown, and the hind wings having a submarginal row of white crescents, and wanting the patches of black scales. The head, neck, thorax, breast, and abdomen, both above and below, are much spotted with white.

The orchidaceous plant represented in the plate is the Indian Dendrobium pulchellum of Roxburgh, a native of woods in the district of Sylhet.

HABITS OF THE NORTH AMERICAN SPECIES OF PAPILIO.

Mr. Edward Doubleday, whose notices of the Natural History of North America (observed during an excursion undertaken solely from a zeal for the subject as exhibited in wild nature) possess the greater interest, has favoured me with a series of notes of the habits of the species of Papilio which he met with, from which the following passages are extracted:—

OF THE PAPILIONES IN BOISDUVAL'S ICONES.

I have seen all, save three, alive; and of these three there are two, the grounds for admitting which into that work I am unacquainted with. These two are Polydamas and Villersii, both *probably* found in the extreme south of E. Florida, where Catagramma Clymene occurs. The other, P. Sinon, being from a drawing by Abbot, I doubt not, does occur in the U. S. By the by, this is not the same

as Drury's Protesilaus, a Jamaica insect, of which I have a specimen, perfectly agreeing with Drury's figure.

The first species I will mention is *Pap. Ajax*, undoubtedly, I think, the P. Marcellus of Cramer. This is, *I believe*, found chiefly in the lower country of the southern States, east of the Alleghanies; its range, I believe, is from Virginia to Florida inclusive. In Florida it was not very rare from April to June, but like most of the *swallowtails* was often imperfect, the tails being torn off. I rarely saw it alight on flowers, never that I recollect on the ground. Now and then it would alight on the flowers of Annona grandiflora, on which and An. (Porcelia) pygmæa, I have no doubt the larvæ feed there. Abbot gives it on An. (Uvaria) triloba, a shrub not growing in the part of Florida I collected in. Its flight low, rapid (not sailing with its wings expanded as P. Thoas and others). It flies in and around the low scattered brushwood, by the sides of clearings, old deserted cotton fields, and similar situations, often returning to the same spots; in fact so regular did the round seem to be taken, that I often have waited behind a bush for a few minutes for the return of an individual I had seen pass, and rarely failed by this means to capture it. It is a shy insect, and darts out of its course at the least motion. I think the remark in Boisduval of its alighting on fruit-trees must belong to some other species, probably the error has arisen from some confusion in Leconte or Abbot's notes.

P. Marcellus. Boisd.—I first saw this lovely butterfly in the streets of Wheeling (Virginia), on the 10th of September, 1837. It was very numerous there. I afterwards took it in Portsmouth (Ohio), about 160 miles lower down the Ohio river. I think it did not occur to me in the perfect state at Cincinnati, where I found the larva on Uvaria triloba. Cincinnati is the westernmost point north of the Ohio that I observed it. Foster took it in the easternmost part of Ohio, and I observed it south of the Ohio, along the slopes of the Alleghanies, in Kentucky, and Tennessee, in July, 1838, in tolerable numbers. Its flight is rather more graceful than that of P. Ajax. It sometimes alights in the muddy places by the roadsides where little streamlets cross, especially during the heat of the day. This and P. Ajax, when perfect and fresh from the pupa, are of a lovely pale green, which, however, soon fades to the dirty white of Boisduval's figures. My specimens are fast fading, but still retain a good deal of the green.

P. Asterias is the most widely-diffused species of the genus, as far as I know, in North America, being found very far north, in Canada, in Newfoundland, and as far south as the middle of Mexico. It seems little affected by climate, for though varying much in size, you will find all sizes both in the north and south. It is in all respects a variable insect. You know the difference in the sexes, each sex differs much in different individuals, in colour especially, in the amount of blue and yellow on the hinder wings. The anterior wings in some indeed are all but falcate, in others almost rounded. It is a common species everywhere, appearing in the south early in spring, nay in the winter months. These are hybernated or hybernating specimens, for they evidently have long been out of the pupa, being all worn. I think Boisduval is probably wrong in its being *three*-brooded. Two broods, the latter hybernating, and appearing the first warm days of spring, I think, is the true state of the case. It flies in gardens, fields, highways, &c., frequently alighting in the mud in hot weather. When settled down in the mud-holes of an Ohio road, or beside the streamlets of the Alleghany roads, it is very easy to take. (Flight, like our Machaon.) It is fond of flowers, especially of some of the thistles (as Cnicus porridulus), and of Cephalanthus occidentalis. Its larva I have seen in gardens on Umbelliferæ.

(*To be continued.*)

ENTOMOLOGICAL INTELLIGENCE, NOTICES OF NEW WORKS, &c.

(No. IV.)

INFORMATION RESPECTING THE HABITS OF EXOTIC INSECTS.—It so rarely occurs that the entomologist is able to obtain any satisfactory remarks on the habits of exotic insects from travellers competent from their knowledge of entomology, combined with enlarged views on the general laws of nature, that I presume no apology is needed in offering to the student, from time to time, extracts from the works of authors whose acquirements stamp a sterling value upon their observations. The writings of Burchell, Darwin, Gosse, and Doubleday, especially merit attentive perusal on this account. The journal and remarks during the years 1832—1836, made by Charles Darwin, Esq., M.A., Sec. Geol. Soc., published as the 3rd Volume of the "Narrative of the Surveying Voyages of His Majesty's Ships Adventure and Beagle," afford numerous passages relative to insects from which the following is extracted.

"At Port San Julian, in Patagonia, although we could nowhere find, during our whole visit, a single drop of fresh water, yet some must exist, for by odd chance I found on the surface of the sea-water, near the head of the bay, a Colymbetes, not quite dead, which, in all probability, had lived in some not far distant pool. Three other kinds of insects—a Cincindela-like hybrida, Cymindis and a Harpalus, which all live on muddy flats, occasionally overflowed by the sea—and one other beetle, found dead on the plain, complete the list of Coleoptera. A good-sized fly (Tabanus) was extremely numerous, and tormented us by its painful bite. We have here the puzzle that so frequently occurs in the case of mosquitoes—On the blood of what animals do these insects commonly feed? The guanaco is nearly the only warm-blooded quadruped, and they are present in numbers quite inconsiderable compared to the multitude of flies," p. 200.

It is a curious circumstance in the economy of nature that the gnat and mosquito are also found in the greatest profusion in damp situations, where they can find but few opportunities of indulging their blood-thirsty propensities (see Introd. to Modern. Class. of Ins. vol. ii. p. 511). The comparatively rare occurrence

also of the Chigoe or Jigger in the human foot, although during the dry season it multiplies incredibly in sandy and dusty places, evidently proves that the ordinary development of the majority of the individuals is elsewhere than in the foot, and consequently that its burrowing into the flesh is but an occasional habit.

Land insects observed on the ocean.—"Several times, when the ship has been some miles off the mouth of the Plata, and at other times, when off the shores of Northern Patagonia, we have been surrounded by insects. One evening, when we were about ten miles from the Bay of San Blas, vast numbers of butterflies, in bands or flocks of countless myriads, extended as far as the eye could range. Even by the aid of a glass it was not possible to see a space free from butterflies. The seamen cried out, 'It was snowing with butterflies!' and such in fact was the appearance. More than one species were present, but the main part belonged to a kind very similar to, but not identical with, the common English *Colias edusa**. Some moths and hymenoptera accompanied the butterflies; and a fine Calosoma flew on board. Other instances are known of this beetle having been caught far out at sea; and this is the more remarkable, as the greater number of the *Carabidæ* seldom or never take wing. The day had been fine and calm, and the one previous to it equally so, with light and variable airs. Hence we cannot suppose that the insects were blown off the land, but we must conclude that they voluntarily took flight. The great bands of the Colias seem at first to afford an instance like those on record of the migrations of Vanessa Cardui†; but the presence of other insects makes the case distinct, and not so easily intelligible. Before sunset, a strong breeze sprung up from the north, and this must have been the cause of tens of thousands of the butterflies and other insects having perished." (Darwin's Journal, p. 185.)

Species et Iconographie générique des Animaux articulés.—Under this title M. Guérin Meneville announces the publication of a new work, to appear in parts, at the beginning of 1842, consisting of a series of illustrated monographs of insects, which will doubtless maintain the scientific reputation of their author.

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* "I am indebted to Mr. Waterhouse for naming these and other insects."

† Lyell's Geology, vol. iii. p. 63.

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PLATE XVII.

ILLUSTRATIONS OF TWO ROSTRATED LOCUSTIDÆ.

THE insects represented in the opposite plate exhibit a singular departure from the ordinary form of the Locusts, in the front of the head being produced into a long rostrum somewhat like that of the typical Fulgoræ. Amongst the grasshoppers with long antennæ there is a genus, Copiophora, in which the head is elevated into an erect and pointed horn, and in Mesops and Proscopia, two genera of Locusts, we find an approximation to these two insects.

Notwithstanding the great elongation of the head in front of the eyes, I refer the unique insect represented in the upper figure to the genus Opsomala of Serville rather than to his genus Mesops, because the antennæ are inserted near the eyes, whereas in the latter genus (which has much more the habit of Truxalis) the eyes are "placés assez loin des antennes," and because the same organs are not ensiform, thus assigning the insect to Serville's second division of Opsomala with the "antennes composées d'articles peu aplatis et point élargis."

OPSOMALA GLADIATOR, *Westw.* (Pl. 17, fig. 1).

Luteo-fusca, virescente parum tincta, capite antice in rostrum (prothorace duplo longius) producto, antennis rostro brevioribus gracilibus, alis hyalinis vix incoloratis, abdomine longissimo, pedibus 4 anticis brevissimis.

Long. corp. (rostro incl.) unc. 3½; long capitis unc. 1, ante oculos unc. ¾. Expans. tegm. unc. 3¾.

Habitat Sierram Leonam. In Mus. D. Hope.

This is a giant in the genus Opsomala, being nearly twice as long as the largest described species. It is entirely of a luteous brown colour, slightly varied with darker brown, with a paler oblong patch on each side of the upper surface of the prothorax. The head is produced into a rostrum nearly three-fourths of an inch long, its upper surface being nearly continuous with the disk of the head, and gradually narrowed from the eyes to the tip; the upper surface flat along the middle, but with the sides towards the eyes deflexed; the under surface of the rostrum forms a very sharp edge, and is slightly curved, the tip being obliquely truncate. The eyes are oval and slightly elevated; the antennæ are placed at the base of the lateral channel which extends from the base to the apex at the sides of the rostrum; they are slender, filiform, and not so long as the rostrum. The prothorax is slightly rugose, with the dorsal carina scarcely elevated, and with three transverse very slight impressed lines across the middle of the back. The tegmina are narrow, not so long as the abdomen, with the apex almost rounded; they are of a pale luteous-brown colour, with the veins varied with darker brown; the wings are almost colourless; the middle of many of the cells is, however, rather clouded with a tinge of pale brown. The abdomen is very compressed and shining, with the anal appendages whitish. The four fore legs are very short, and the hind pair are scarcely longer than the abdomen; the femora terminating on the outside in an elongated spine. The prosternum is armed with a short spine, and the meso- and metasternums are broad.

The insect represented in the lower figure constitutes a new genus, which, notwithstanding the great size of the frontal prominence, I arrange in Serville's section Conophori, and to which may be applied the generic name of

BACTROPHORA, W.

Corpus elongatum subcylindricum; caput magnum, oculis magnis prominentibus, fronte in baculum (capite fere duplo longiorem) cylindricum, infra carinatum producto. Antennæ prothoracis longitudine, 24-articulatæ, parum compressæ, articulis 3tio et proximis brevissimis et tenuioribus; inter et prope oculos ad basin rostri insertæ. Facies infra valde tumida; labrum maximum bilobum. Prothorax tuberculatus, absque carina dorsali, canalibus duobus transversis impressus. Pedes 4 antici breves. Prosternum dente brevi obtuso armatum.

BACTROPHORA DOMINANS, *W.* (Pl. 17, fig. 2.)

Tota luteo-fulva, antennis (articulis 2us basalibus exceptis) nigris, tegminibus fusco-nebulosis alis apice fuscis.

Long. corp. rostro incluso unc. $3\frac{1}{2}$. Long. rostri ante oculos $\frac{6}{10}$ unc. Expans. tegm. unc. 4.

Habitat—? In Mus. Soc. Zool. Lond.

The produced front of the head forms a snout somewhat like that of some species of Fulgora, ascending a little from the impressed arched channel between the eyes; the under side is rather rugose, and along the centre runs a carina which terminates in the acute arched, rather dilated apex: this carina at its base is furcate, each branch extending to the base of one of the antennæ; the pronotum is covered with small tubercles, which even extend along the anterior margin, two being of larger size in the middle. The tegmina are opake and very closely reticulated; they are of the same colour as the rest of the body, but are clouded with many small patches of brown; the wings are pale fulvous at the base, with the apex dark brown.

I regret that the locality of this extraordinary and unique insect is unknown.

The plant figured is part of a twig of Combretum comosum, a splendid species found at Sierra Leone.

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PLATE XVIII.

ILLUSTRATIONS OF TWO SPECIES OF PAPILIO.

The two upper figures in this plate represent a butterfly described by Fabricius fifty years ago under the name of

PAPILIO PELAUS,

(Fabr. Ent. Syst. vol. iii. part 1, p. 5), but of which no figure has hitherto been published; indeed the insect appears to be of the greatest scarcity, since Godart and Boisduval are acquainted with it only from the Fabrician description; whilst from Fabricius having referred it to the Papilio torquatus of Cramer (Ins. 15, t. 177, fig. AB), with a mark of doubt, its rank as a species has been questioned*. I am indebted to E. Doubleday, Esq. for an opportunity of figuring a specimen which accords with the Fabrician description, except in having one white detached lunule near the anal angle above, and two beneath. There cannot, however, I think, be a doubt that it is the true Pelaus, and that it is abundantly distinct from P. torquatus. Mr. Doubleday is unfortunately unacquainted with the locality of his specimen. Fabricius says, "Habitat in India," but the habit of the species, as Boisduval suggests, is rather that of a New World—most probably South American or West Indian—species.

The lower figure represents a new species, allied to P. Thymbræus, and especially to P. Perrhebus; for an opportunity of figuring which I am also indebted to Edward Doubleday, Esq., in whose collection it is unique. Being a native of Mexico, I propose to give it the name of

PAPILIO MONTEZUMA, W.

P. alis latis cyaneo-nigris, anticis punctis minutis marginalibus albis, posticis obtuse dentatis lunulis marginalibus albis, lunulisque sex submarginalibus maculaque ad angulum ani sanguineis.

This species measures about four inches in the expansion of the wings, which are comparatively of great breadth; the fore pair having the apical margin slightly rounded and divided into slight scallops; the hind pair are obtusely dentate, the middle tooth being

* P. Pelaus *Herbst*, (P. Peleides *Esp.*, *Boisduval*,) is distinct, if indeed it really exist in nature.

produced into a very short tail. On the upper side the disk of the wings is of a fine raven blue-black; the apical margin of the fore wings marked with small whitish spots between the longitudinal veins; the hind wings have whitish marginal scallops, and a row of six crimson-pink submarginal lunules, and an irregularly squarish spot of the same colour within the anal angle.

The under side (represented in fig. 3) is similar to the upper, except that the disk is not so intensely raven black, and the red lunules of the hind wings are rather smaller. The body is black, with the palpi and sides of the head, thorax, and abdomen crimson pink.

The orchidaceous plant represented in the plate is the Maxillaria tenuifolia of Lindley (Bot. Reg. v. 25, pl. 8), a native of Mexico, recently introduced into this country.

MR. DOUBLEDAY'S NOTES ON THE HABITS OF THE NORTH AMERICAN SPECIES OF PAPILIO.

(*Continued from page* 62.)

P. Calchas is quite a southern species. I do not know its northern limit precisely, but am not aware of its occurring farther north than N. Carolina; Cramer I think says Virginia; but his localities are not to be depended on, any more than Boisduval, who mistakes states as large as England for towns. I only saw it in E. Florida, where I found the larva on the Red Bay, Laurus Carolinensis. The perfect insect I saw first early in February, when I captured a worn specimen on the flowers of Gelsemium sempervirens. This had of course hybernated. I found it in profusion at St. John's Bluff, chiefly in an open spot near the river, and in old cotton fields, where it frequented the flowers of Cnicus horridulus, and was then very easy to take. Sometimes it sails up and down the pathways in the woods, its flight then is easy and almost majestic.

P. Philenor. See Harris for its northern limit. I know of its occurrence in different localities from N. York to E. Florida. It there (E. F.) frequented the flowers of Annona grandiflora. It is fond of alighting in the mud, like Turnus &c. My western specimens are infinitely finer both in size and colour than any I have seen from the Atlantic states, be they northern or southern. Flight not very powerful, generally low.

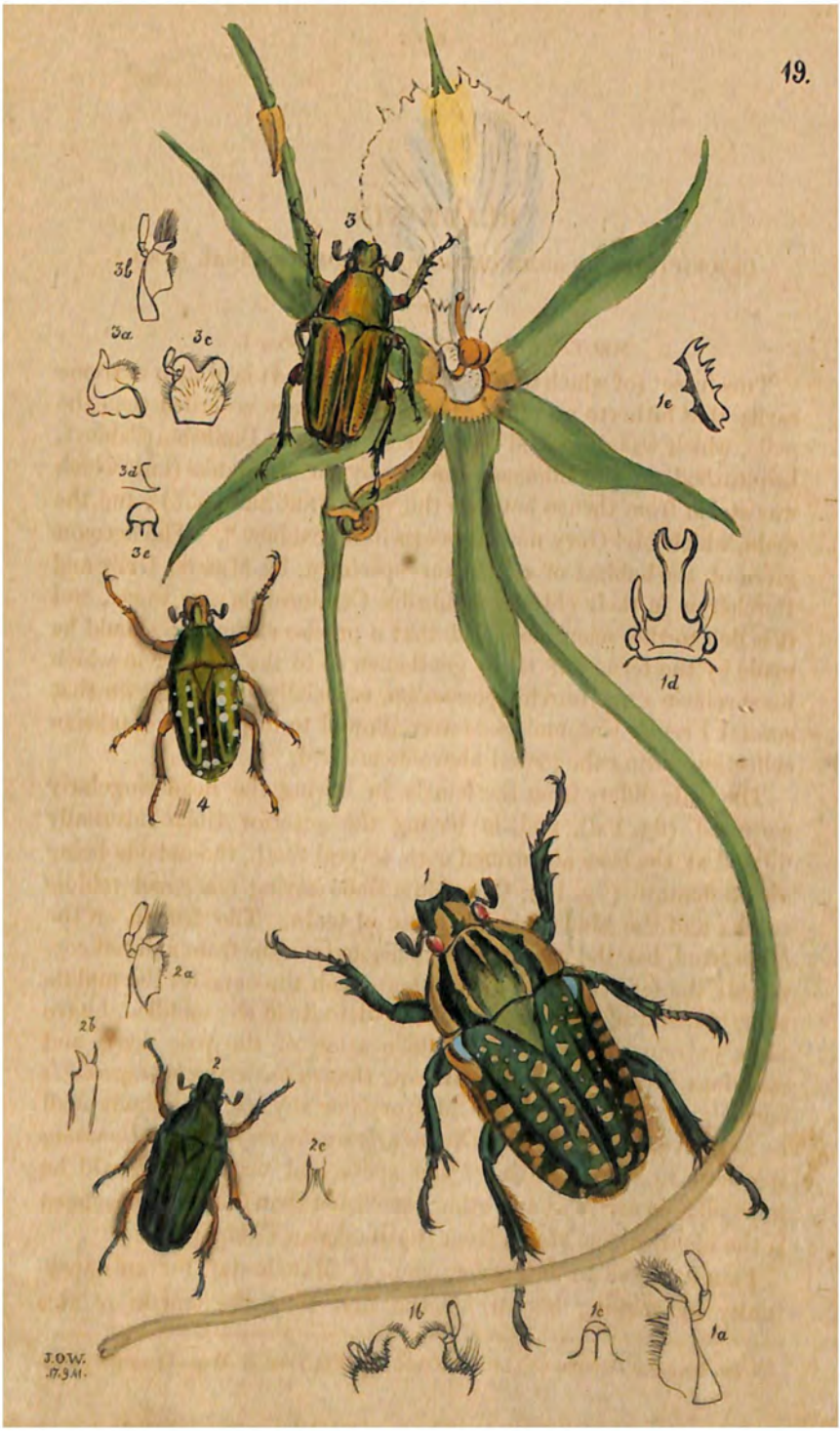
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PLATE XIX.

DESCRIPTIONS OF SOME CETONIIDÆ FROM TROPICAL AFRICA.

MECYNORHINA POLYPHEMUS.—Fig. 1.

This insect (of which the female is here figured) is of such extreme rarity that hitherto no other examples have been recorded than the male, which was described by Fabricius from the Banksian Cabinet, bequeathed to the Linnæan Society by Sir J. Banks (but which was stolen from thence between the years 1826 and 1836); and the male, which Mr. Gory now possesses in his cabinet *. The account given of the habitat of the latter specimen, by Messrs. Gory and Perchéron, in their (Monographie des Cétoines), is very vague, and it is due to the scientific world that a precise statement should be made by the former of these gentlemen as to the manner in which his specimen came into his possession, especially as it is known that several French Entomologists were allowed to inspect the Banksian collection during the period above-mentioned.

The male differs from the female in having the head singularly cornuted (fig. 1 *d*), and in having the anterior tibiæ internally dilated at the base and armed with several teeth, the outside being also 3-dentate (fig. 1 *e*), the middle tibiæ having one small middle tooth; and the hind tibiæ destitute of teeth. The female, on the other hand, has the head rather emarginate in the front and not cornuted; the fore tibiæ are only 3-dentate on the outside, the middle tibiæ bi-dentate, and the hind tibiæ 1-dentate in the middle. I have been extremely careful in the delineation of the pale spots and markings, for the purpose of showing that *in this respect the species is variable*, and consequently if M. Gory's or any other specimen shall be found to *correspond with Olivier's figure drawn from the Banksian specimen*, in the position of the spots and markings, it will be impossible to arrive at any other conclusion than that such specimen is the identical one stolen from the Banksian Cabinet.

I am indebted to J. Turner, Esq., of Manchester, for an opportunity of making known, for the first time, the female of this

* Dr. Burmeister informs me (14th of November, 1841,) that M. Dupont possesses a male.

beautiful insect, which is a native of the Gold Coast, Africa. Fig. 1 *a* represents its maxilla, both lobes of which are furnished with a strong tooth; fig. 1 *b*, the extremity of the deeply-cleft mentum and the labial palpi; and 1 *e*, the mesosternum.

The Rev. F. W. Hope first proposed the genus Mecynorhina in his "Coleopterist's Manual," part 1, p. 60, 1837. He, however, added Goliathus micans, Daphnis, and Grallii, to Polyphemus; but in the Supplement to that work, p. 119, he restricted it to the last-named insect, stating that a second species is in the possession of Mr. Joseph Hooker, of Glasgow, which he considered as undescribed; but which, I am able to state, is the male of Goliathus torquatus *. Mr. MacLeay has, however, separated Polyphemus and Torquatus into distinct subsections (as shown in his arrangement of the Goliathi †, abstracted at page 6 of this work,) in consequence of the difference in the armature of the head of the males. The male of G. torquatus, however, *has two short horns in front of the eyes*, although the extremity of the middle horn is not forked. The two species, however, precisely agree in the armature of the tibiæ in both sexes, and, which is of more importance, in the structure of the maxillæ and mentum, as well as in the velvety clothing of the upper surface. These two insects, therefore, constitute a group of precisely equal rank with Dicronorhina ‡, Hope (*Atlas*, Lap. Hist. Nat. An. Art. Col. v. 2, p. 162);—Eudicella, White (Gol. Grallii, Daphnis, Smithii, Morgani, &c., in which the males have the mando toothless, although in the females it is armed with a strong tooth, and the fore tibiæ toothed only on the outside in the males); and Cœlorrhina, Burmeister MSS. (Gol. 4. maculatus, Olivier); the last-named group being distinguished by the male having the anterior tibiæ entirely destitute of teeth, and the clypeus concave in front with a short central recurved horn dilated at the tip, like a

* Schonherr evidently changed the name of this species to avoid confusion with Cetonia torquata of Fabricius, a different species. In the male of M. torquata (as appears from Mr. Joseph Hooker's drawings, and Dr. Burmeister's manuscripts) the mando is unarmed; in the female, however, in Mr. Hope's collection I find it furnished with a strong tooth. Mecynorhina thus differs from Eudicella, chiefly in the armature of the fore tibiæ of the males.

† The various facts stated in the first article of this work and in the present paper, together with the circumstances that Goliathus Höpfneri is most nearly allied to Ischnostoma (according to the manuscripts and figures of Dr. Burmeister), and that the Coryphe (Narycius) olivaceus of MacLeay and the Goliathus (Dicronocephalus) opalus of MacLeay, are sexes of the same species, (Dr. Burmeister having shown me M. Dupont's original specimens) will render necessary an entire revision of the Goliathideous Cetoniidæ, whilst the removal of Cryptodus to the Dynastidæ, Macroma to the Cremastocheilides, and Philistina (or Mycteristes) to the Goliathides, will render equally necessary a revision of the classification of the entire family of Cetoniidæ.

‡ A more important character of this group than has hitherto been noticed has been suggested to me by Professor Burmeister, namely, the want of a tooth to the lower lobe of the maxilla. This I find to be the case in both sexes.

reversed triangle; and the female having the head broad and nearly quadrate, the fore tibiæ externally 3-dentate, the four posterior with one tooth in the middle, and both lobes of the maxilla armed with a strong tooth *.

The three other insects figured in this plate will be deemed highly interesting additions to this family, not only because they are not included in the work of Gory and Perchéron, or Mr. MacLeay's Memoir on the African Cetoniidæ, but from their structural characters. The two upper ones were regarded by Dr. Burmeister, whilst in this country, as congenerous with Cœlorrhina 4-maculata. They, however, certainly belong to a different group, which appears to me to be intermediate between Coryphe of MacLeay (Gnathocera, G. and P., but not of Kirby), and the more aberrant Schizorhinæ †, and for which may be proposed the sub-generic name of

TMESORRHINA, W.

Caput maris haud cornutum, clypeo in utroque sexu emarginato. Maxillæ lobo interno apice obtuso vel in dentem brevissimum et obtusum producto; lobo apicali brevi obtuso supra dense ciliato. Mentum apice valde incisum. Prothorax subtrigonus postice latissimus margine postico in medio emarginato. Elytra basi latiora, interdum ad apicem suturæ spinosa. Mesosternum breve, porrectum latum rotundatum. Pedes antici maris longitudine variant, tibiis externe (nisi in apice) haud vel vix dentatis. Tibiæ intermediæ maris in medio inermes, posticæ vero in medio dente minuto instructæ. Pedes fœminæ breviores latiores, tibiis anticis extus 3-dentatis, intermediis in medio vix dentatis; posticis in medio 1-dentatis, ungues appendiculo brevi bisetoso instructi. Color metallicus nitidissimus.

In respect to the unarmed head of the males, these insects may be considered as the African representatives of Coryphe læta of Java, and C. nigritarsis of India; the maxillæ, anterior tibiæ, and clypeus are, however, not similar; the latter character would indeed induce us to refer these insects to Schizorhina, but we find an emarginate clypeus in the females of Coryphe umbonata and C. flavomaculata, whilst the metallic colouring is more especially the character of Coryphe.

Species 1.—*Tmesorrhina amabilis*, W. (Pl. 19, fig. 2.) Smaragdina, nitida, nigro-punctulata, antennis nigro-piceis, femoribus tibiisque rosco-opalinis, tarsis nigris, prothoracis lateribus (nisi versus angulos posticos) marginatis — ♂.

Syn.—*Gnathocera amabilis*, Bainbridge (in Proc. Ent. Soc. p. 5, March 2, 1840).

Long. corporis, lin. 10. Habitat Sierram Leonam, D. Strachan. In Musæo D. Hope.

* I am indebted to the Rev. F. W. Hope for permission to dissect a great number of his rare and unique Cetoniidæ, including a female of Cœl. 4-maculata.

† Such as S. cyanea, Oliv., which is a native of Sierra Leone, although Mr. MacLeay says that no Schizorhinæ occur in Africa (Cet. So. Afr. p. 28). It has the apical lobe of the maxillæ terminating in an acute spine, the inner lobe unarmed, the male fore tibiæ narrow and terminated externally by *two* spines; and the female fore tibiæ broad and tridentate. Mr. MacLeay gives this as the type of his section of Schizorhina which he named Insulares (I presume after Sch. insularis), which is, however, very unlike Sch. cyanea, in many respects.

The fore legs in the unique male of this species in Mr. Hope's collection are shorter than in Tm. simillima, with the tibiæ slightly indicating the existence of two teeth in addition to the apical one, which is separated from the next by a deep incision. The middle tibiæ are straight, but the hind ones are slightly bent at the middle, with a minute tooth on the outer edge. The maxillæ have the inner lobe terminated by a short black horny point. The elytra are not spinous at the extremity of the suture. Fig. 2 *a*, maxilla; 2 *b*, extremity of the anterior tibiæ; 2 *c*, ungues.

Species II.—*Tmesorrhina concolor*, W. (Pl. 19, fig. 3.) Aureo-smaragdina, punctulata, antennis tarsisque 4 anticis nigris, posticis duobus aureo-viridibus, elytris lineis duabus longitudinalibus lævibus, humerisque macula triangulari nigra notatis, segmentis ventralibus medio opalinis ♀.

Syn.—*Cœlorrhina concolor*, Burm. Hope (in Proc. Ent. Soc., July, 1841).

Long. corp. lin. 12=1 unc. Habitat Sierram Leonam.

In Mus. Britann. et Hope.

We are acquainted only with the female of this species, which may at once be known from the preceding by its splendid golden green colour, larger size, and by the prothorax having the sides entirely margined almost to the hinder angles. The colour of the feet is also different. Fig. 3 *a*, represents the mandible; 3 *b*, the maxilla, the mando of which terminates in a very minute point, and the galea is thick, horny, and obtuse; 3 *c*, the mentum and labial palpus; 3 *d*, the mesosternum seen sideways; 3 *e*, ditto, seen from beneath.

Species III.—*Tmesorrhina simillima*, W. pl. 19, fig. 4. Læte viridis, nigro punctulata clypeo antennis pedibusque fulvis viridi-nonnihil tinctis, elytris guttis 18 minutis albis notatis, prothorace ante scutellum rubro-marginato ♂. Long. corp. lin. 12.

Habitat Sierram Leonam. In Mus. Britann. (sub nomine Cœlorrh. s. Burm.)

The unique male of this species in the British Museum is of a narrower form, and the legs are longer than in Tm. amabilis. The anterior tibiæ are slender, with the outer margin not dentate, but terminating in an apical spine, being rather narrowed beyond the middle, and their inner margin is hairy. The middle tibiæ are unarmed on the outside, but slightly hairy on the inner margin at the apex; and the hind tibiæ are straight, with a minute central tooth on the outside. The suture of the elytra terminates in two short spines; the mando of the maxilla is unarmed.

The extraordinary plant represented in the plate is the Angræcum caudatum of Lindley, one of the Orchidaceæ, at once distinguished by the singular elongation of its spur, which Dr. L. informs me sometimes reaches a foot in length. It is a native of western tropical Africa.

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A
B
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1a
1c
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PLATE XX.

MONOGRAPH OF THE HYMENOPTEROUS GROUP, DORYLIDES.

The group Dorylides, composed of the four genera Dorylus, Rhogmus, Labidus, and Ænictus, presents to us a series of insects, now of considerable extent, of which we still remain in entire ignorance of the females, as well as of the natural habits of the group; our knowledge being at present confined to the characters of the male sex, and to the facts that the males are often captured flying by night, and are so rare that out of a dozen species of Labidus collected in Brazil, by W. Burchell, Esq., single individuals were only found of nearly every species. Mr. Shuckard, in his Monograph upon this family, has suggested that my genus Typhlopone is composed of the females of Labidus, and has consequently removed Typhlopone from the family of the ants, in which, as I have endeavoured to prove in a memoir subsequently published in the Annals of Natural History, he appears to me to have violated nature, Typhlopone possessing a far greater majority of the characters of the Formicidæ than of any other family. Latreille considered the Dorylides as aberrant Mutillidæ, deeming them to be solitary insects; whilst St.-Fargeau and Haliday place them in the family of the social ants; Shuckard however considers them as an oscillant family between the Mutillidæ and Formicidæ, on account of their possessing—firstly, only a single recurrent vein to the fore wings; secondly, a single calcar to all the tibiæ (characters of the Formicidæ); thirdly, a labrum closely shutting the mouth (a character of both families); fourthly, the curtailed structure of the palpi (which is stated to "separate them peculiarly from both tribes"); and fifthly, the enormous size of the male genital organ, in which Mr. Shuckard states they exclusively resemble several of the solitary Heterogyna. The curtailed structure of the palpi and the large size of the male genital organ are, however, characters of some of the Formicidæ, as particularised in my observations on Typhlopone, and thus in every one of these characters the Dorylides are seen to resemble the Formicidæ, with which they also agree in

the distinct basal segment of the abdomen *. Considering, therefore, the Dorylides as a section of the Formicidæ, and having shown that Typhlopone also belongs to the same family, it may be urged that there are good grounds for considering with Mr. Shuckard that Typhlopone is composed of female Labidi. I do not think that this is the case, for the reasons which I have given in my observations on that genus above referred to, but I am far from willing to assert that such may not ultimately prove to be the case.

Labidus, *Jur.*

Of this genus, composed, as it was supposed to be until last year, of only a single species, Mr. Shuckard gave an excellent Monograph, including descriptions of ten species (exclusive of L. mediatus). By the kindness of W. Burchell and J. Miers, Esqrs., I am, however, enabled to double the number of species; several of my new species possessing curious characters not hitherto noticed. I may likewise add, that, with the exception of Perty's wretched figure of the species he named Labidus Latreillii, no illustration has yet been published of the genus, nor do we find in the latest works the internal organs of the mouth correctly described. These I have figured under the letters A and B, and they will be found to resemble the corresponding parts in Typhlopone, as figured by me in my "Introduction to the Modern Classification of Insects," vol. ii. p. 226, fig. 86, 19, 20.

Section A.—Peduncle subtriangular, with the sides elevated.

Species I.—*Labidus Fargeavii*, Shk. (Mon. Dor. p. 11.) Rufo-fusco-hirtus; capite, antennis, thorace femoribusque nigris, cætera rufo-fuscus, abdomine supra rufo-sericeo, pedunculo supra canaliculato, venis alarum fulvo-rufis. Long. Corp. environ 14 lig. = 17 lin. angl. mens. fere.

Syn.—*Labidus Latreillii*, Saint-Farg. H. N. Hym. 1. 229. nec Jurine.

Inhabits the province of St. Catherine, Brazil, on the sea-coast.

Species II.—*Labidus Burchellii*, W. (Plate 20, fig. 1.) Picco-niger, pubescens et pilosus, abdomine fulvo-brunneo, pedunculi lateribus valde elevatis mandibulis subrectis, tibiis tarsisque posticis gracilibus. Long. Corp. lin. 9½. Expans. alar. lin. 18½.

Taken at Santos, Brazil, by W. Burchell, Esq., on the 30th October, 1826, at 9 o'clock P.M.

This very distinct species has the head and thorax of a dirty brown colour and pubescent, and the abdomen fulvous-brown and not shining, the body beneath and at the sides clothed with long slender reddish hairs. The head is large, and the ocelli minute. The mandibles are long, nearly straight, the tips only being bent round, (Fig. 1 *a*). The thorax is clothed with a dirty luteous pubescence, it is scarcely broader than the head, and not gibbous in front; the abdominal peduncle is subtriangular, the sides very much elevated, the hind angles acute and produced; the extremity of the abdomen is deflexed; the antennæ and legs are long and slender; the femora blackish; the tibiæ pitchy, but on the upper side reddish; the tarsi testaceous, the posterior tibiæ and tarsi slender, the tarsi having a minute tubercle at the base; within (fig. 1 *b*; 1 *c*, ungues); the wings are very slightly stained with brown, and almost hyaline, the veins brown; the marginal cell is angulated behind, and the cubital vein is not thickened behind the second submarginal cell.

* Other characters which these insects possess in common with the Formicidæ are detailed by St.-Fargeau and Haliday.

Species III.—*Labidus Jurinii*, Shk. (Mon. Dor. p. 11.) "Rufo-testaceus, pubescens; capite (mandibulis antennisque exceptis) nigro; pedunculo abdominis subtrigono, supra valde concavo; pedibus longissimis," tibiis postieis articuloque basali tarsorum posticorum compressis; alis subfulvis. Long. Corp. lin. 10½. Expans. alar. lin. 20.

Supposed by Mr. Shuckard to be an inhabitant of Demerara. Mr. Miers has brought it from Brazil.

Species IV.—*Labidus Latreillii*, Jurine, (Latr. Shk.). Rufo-testaceus pubescens, pedunculo abdominis subtrigono, supra in medio plano, ad latora elevato; alis læte fulvis venis fuscis Long. Corp. lig. 8=9¼ mens. angl.

Inhabits Cayenne.

Species V.—*Labidus Servillei*, W. (Plate 20, fig. 2.) Testaceo-fulvus breviter pilosus, capite nigro, pedunculo subtrigono, lateribus valde elevatis, tibiis basique tarsorum posticorum latis compressis, alis infuscatis, venis fulvo-fuscis. Long. Corp. lin. 8¼. Expans. alar. lin. 14.

Taken at Para, in Brazil, by W. Burchell, Esq., on the 1st February, 1830, at 11 o'clock P.M.

The head small and black, the ocelli large, and placed in a triangle; the space between each of the hind ones and the eyes equal to the space between these two ocelli; facial carinæ strong, terminating beneath the front ocelli; mandibles large, curved, a large space being left between them and the clypeus; antennæ long, slender, and fulvous; basal joint thicker than the terminal part. Thorax not very convex in front; peduncle of the abdomen much narrower than the next joint, subtriangular, truncated in front, with the fore angles rounded; hinder angles prominent and acute; sides very much elevated, shining; remainder of abdomen pubescent, deflexed at the extremity; anal plate not deeply notched, the two angles acute; legs long, fulvous; hind tibiæ flat, attenuated along the basal half; basal joint of tarsi dilated and emarginate within near the base to receive the spur of the tibiæ; wings dusky, the veins dark fulvous brown; fore wings shorter, and more truncate at the tip than usual.

Section B.—Peduncle with the sides parallel and not elevated.

†.—Peduncle shorter than broad.

‡.—Legs moderately long.

Species VI.—*Labidus Hartigii*, W. (Plate 20, fig. 3.) Rufo-brunneus, abdomine fasciculato, pilosissimo, pilis longis fulvis, pedunculo angusto. Long. corp. lin. 8. Expans. alar. lin. 19.

Inhabits Brazil, Rio Janeiro, J. Miers, Esq.; also taken at Sapé, in Brazil, by W. Burchell, Esq., on the 14th of October, 1828, at 10 o'clock P.M.

Entirely of a brown-red colour and not shining, except at the junction of the abdominal segments; front of the body with very short hairs; metathorax and abdomen clothed at the sides above with very long fulvous hairs, and forming a thick brush at the extremity of the body. The antennæ are moderately long and slender, the basal joint rather thicker; mandibles long and much curved; facial carinæ but little elevated, but with a deep fossula between them, extending to the front ocellus. Thorax very gibbous in front, metathorax narrower than the mesothorax, its hind angles rounded off. Peduncle narrow, with the hind angles acute. Extremity of abdomen deflexed; fore legs short, hind legs rather long, with the tibiæ and tarsi simple; wings stained light honey-colour, with the stigma and veins fulvous, the submarginal cell lanceolate, not acuminated from the apex of the second submarginal cell, nearly as large as the first two submarginal cells united; the first of these is somewhat larger than the second, and is divided from it by a curved vein, the second receives the recurrent vein rather before the middle of its length, beyond which the cubital vein is not thickened.

Species VII.—*Labidus Esenbeckii*, W. (Plate 20, fig. 4.) Rufo-brunneus, abdomine lineis duabus dorsalibus pilorum rufo-brunneorum, pedunculo thoracis latitudine. Long. corp. lin. 7½. Expans. alar. lin. 19.

Taken at Rio Vendinha, in Brazil, by W. Burchell, Esq., on the 10th of September, 1828, in the evening.

Entirely of a brown-red, not shining; mandibles very long and curved; facial carinæ scarcely extending above the base of the antennæ; the front of the thorax very gibbous, metathorax as broad behind as the front of the thorax, acutely truncate; peduncle as broad as the metathorax, its hind angles acute; the other abdominal segments with two rows of red-brown hairs, few in number on the anterior segments, but forming two thick pencils at the extremity, which

is deflexed; hind legs longer than in the preceding, tibiæ and tarsi simple; wings almost hyaline, very slightly stained with fulvous, which is the colour of the veins; stigma darker, marginal cell large, acutely angled behind, the second transverso-cubital vein being very short; the recurrent vein is inserted near the base of the second submarginal cell, the cubital nervure beyond it not being dilated.

‡‡ Legs very short.

Species VIII.—*Labidus Illigeri*, Shk. (Mon. Dor. App. p. 43.) Fuscus, subpubescens; vertice, prothorace, extremitate mesothoracis, scutello, metathorace et pedunculi disco nigris; abdomine rufo-testaceo subnitido. Long. corp. lin. 7. Expans. alar. lin. 15½.
Inhabits Brazil. In Mus. Shk.

Species IX.—*Labidus Halidaii*, Shk. (Mon. Dor. p. 13.) Rufo-testaceus, pubescens, capite (clypeo, mandibulis antennisque exceptis) nigro, stigmate alarum brunneo et abdominis pedunculo transverso-quadrato, supra in medio convexo. Long. corp. lin. 7. Expans. alar. lin. 14½.
Syn.—*Lab. Latreillii*, Hal. Linn. Trans. 17, p. 328.
Inhabits Brazil, St. Paul. In Mus. D. D. Curtis et King.

Species X.—*Labidus Fonscolombii*, W. Totus brunneo-testaceus, pubescens, abdomine subnitido, stigmate alarum rufo-testaceo, pedibus brevissimis. Long. corp. lin. 7. Expans. alar. lin. 16½.
Inhabits Brazil. D. Miers.

Entirely of a brownish-red, finely pubescent, the abdomen brighter coloured and rather shining. Head small; mandibles short and slightly curved, very hairy; face with a central channel extending to the front ocellus; ocelli placed in a curved line. Thorax very gibbous in front and at the scutellum. Abdomen with the peduncle nearly as broad as the following segment, its posterior angles rounded off, its upper surface entire and slightly convex, the ventral portion slightly angulated; abdomen with the intermediate segments slightly constructed at the base; anal plate with a very deep notch, the lateral processes very acute. Wings very slightly tinged with cinereous, more fulvous towards the costa. Stigma fulvous brown; marginal cell evidently acuminate beyond the apex of the second submarginal cell, the first transverso-cubital vein curved, and the second cubital cell receiving the recurrent vein nearer the base than the middle of its length, beyond which the cubital vein is strongly thickened. The legs are exceedingly short.

Obs.—Most of the characters given above will distinguish this species from L. Halidaii, whilst the colour of the head, thorax, and peduncle, the shorter scape to the antennæ, and the more villose and more robust thorax, distinguish it from L. Illigeri, and its considerably larger size from L. Swainsonii.

Species XI.—*Labidus Swainsonii*, Shk. (Mon. Dor. p. 14.) Rufo-testaceus, pubescens, capite (mandibulis antennisque exceptis) castaneo; pedunculo abdominis transverso-quadrato, supra subconvexo, pedibus brevibus.
Long. corp. lin. 6½. Expans. alar. lin. 13.
Habitat in Brasilia. (Mus. D. Shuckard.) Para in Brasilia, D. Burchell (capt. 17 Decemb. 1829, ad 11 hor. P.M.) Etiam in Mexico. Mus. Westwood.

Species XII.—*Labidus Hopei*, Shk. (Mon. Dor. p. 15). Rufo-testaceus, pubescens; capite (mandibulis antennisque exceptis) atro; thorace fusco, scutello in medio sulcato, et pedunculo abdominis transverso-quadrato, supra subconvexo. Long. corp. lin. 6. Expans. alar. lin. 12.
Habitat in Brasilia. In Mus. Hope, Shuckard et nostr. Comm. D. Melly.

Species XIII.—*Labidus Gravenhorstii*, W. Testaceo-fulvus, capite (antennis mandibulisque exceptis) atro, thoracis dorso fusco, abdomine longo cylindrico. Long. corp. lin. 7. Expans. alar. lin. 12½.
Taken at Rio Vendinha in Brazil on the 10th of September, 1828, in the evening, by W. Burchell, Esq.

The head is rather small and black, the ocelli large and wide apart, the clypeus castaneous, the mandibles rather short and curved, the antennæ slender; the thorax brown, above pubescent, beneath more testaceous, not very gibbous in front; scutellum entire, not sulcated; peduncle as broad as the abdomen, and shortly transverse-quadrate, flat above, with the posterior angles produced backwards and acute; the sides obliquely truncate towards the hind angles, beneath scarcely angulated; the remainder of the abdomen almost cylindrical, the legs short and testaceous, red, the hind tibiæ and tarsi simple, tibial spur straight and not

dilated at the base; wings slightly dusky, with a fulvous tint towards the base, apex, and costa; wings and stigma fulvous; marginal cell conical at the tip, second submarginal cell larger than the first, and separated from it by a nearly straight vein, the recurrent vein received in the middle of the second submarginal cell, beyond which the cubital vein is slightly thickened; abdomen with the last joint compressed above at the tip; anal plate deeply emarginate, the lateral processes acute.

Obs.—This species approaches nearest to L. Hopei, but is distinguished from it by many of the characters given above.

Obs.—Mr. Burchell also captured a specimen at Guardamôr, in Brazil, on the 8th of September, 1828, at midnight, which differs from the above in having the wings rather more dusky, with the stigma darker and brown at the base, the vein separating the first and second submarginal cells, straight, and the anal plate not exposed.

Species XIV.—*Labidus Spinolæ*, W. Fuscus, cylindricus, capite atro, abdomine fulvo-fusco, pedunculo transverso, lateribus subrotundatis, alis infumatis, venis stigmateque subfuscis. Long. corp. lin. 6½. Expans. alar. lin. 11½.

Taken at Meia Ponte, in Brazil, on the 16th of October, 1827, by W. Burchell, Esq. Very similar to L. Gravenhorstii, from which it differs in its darker-coloured wings and stigma; the two basal submarginal cells are not so long, the vein separating them being less oblique, the legs darker coloured, the peduncle broader and not so square, the sides being rather rounded, the central surface scarcely angulated.

Mr. Burchell also captured another specimen at Caisara, in Brazil, on the 23d of October, 1827, which although greatly mutilated appears to belong to this species.

Species XV.—*Labidus Guerinii*, Shk. (Mon. Dor. App. p. 44). Fuscus, subpubescens; capite atro, scapo antennarum incrassato, clypeo tuberculis binis acutis, recurvis, instructo; mesothorace antice valde convexo, abdomine pedibusque magis rufescentibus. Long. corp. lin. 5¾. Expans. alar. lin. 12.

Habitat in Brasilia. In Mus. D. Shuckard.

Species XVI.—*Labidus D'Orbignii*, W. (Shk. Mon. Dor. p. 15.) Niger, brunneo-holosericeus, pedunculo abdominis semicirculato, supra subconvexo, nervis alarum brunneo-testaceis, ocellis parvis, cellula marginali brevi postice acute angulata. Long. corp. lin. 6½. Expans. alar. lin. 12.

Habitat in America Meridionali, D. D'Orbigny. In Mus. nostr., e Mus. Reg. Paris. communic.

Species XVII.—*Labidus Walkerii*, W. Castaneo-fuscus, marginibus segmentorum abdominis lucidioribus, alis infumatis, venis fuscis, pedunculo transverso-quadrato, subtus haud angulato. Long. corp. lin. 5. Expans. alar. lin. 9½.

Taken at Meia Ponte, in Brazil, on the 16th of October, 1827, by W. Burchell, Esq. Body long, cylindrical, and of a dark brown colour, with the head darker and the margins of the abdominal segments brighter coloured, pubescent; jaws rather short and curved, facial carinæ extended along the outside of the front ocellus; ocelli large, lateral ones placed close to the eyes. Thorax gibbous before and behind. Peduncle transverse-quadrate, the sides slightly elevated, posterior angles not acute, ventral surface not angulated. Legs short and very slender; wings dusky, with brown veins and a dark brown stigma; marginal cell lanceolate, two first submarginal cells larger, separated by a curved vein, the vein separating the second and third submarginal cells straight and much longer than in L. D'Orbignii, the cubital vein closing the second submarginal cell behind not thickened; the legs are very short and of a brick brown colour.

Most like L. D'Orbignii, but smaller and of a browner colour; the marginal cell differently shaped; the legs not black, the wings darker coloured, with the second submarginal cell of equal breadth throughout.

Species XVIII.—*Labidus Klugii*, Shk. (Mon. Dor. p. 16). Rufo-castaneus, pubescens, vertice, thoracis dorso, et stigmate alarum badiis; clypeo tuberculis binis, acutis, instructo, et pedunculo transverso-quadrato, subconvexo. Long. corp. lin. 4¾. Expans. alar. lin. 8¾.

Habitat in insula St. Vincentii, D. L. Guilding. In Mus. D. Shuckard.

Species XIX.—*Labidus Erichsonii*, W. Longus, cylindricus, rufo-testaceus, capite badio; clypeo integro; pedunculo subtransverso, angulis acutis; stigmate magno nigricanti. Long. corp. lin. 5. Expans. alar. lin. 9.

Habitat in Brasilia, D. Miers.

Entirely of a fulvous red colour (except the head, which is dark chesnut) and shining, being but slightly pubescent; the jaws of moderate size, the clypeus entire, the ocelli very large, the facial carinæ very strong, and extending on each side of the front ocellus, forming a strong angle beneath it; the antennæ are long and slender, the basal joint longer than in L. Klugii; the thorax is not very gibbous in front, the peduncle is narrower than the thorax or abdomen, and of a squarer form than in any of the preceding, with the angles acute; the abdomen is very long and cylindric, not thickened towards the tip as in L. Klugii. The wings are broad and almost colourless, with thin brown veins; the stigma large and blackish; the marginal cell is slightly attenuated towards the tip; the first and second submarginal cells are large, separated by a slightly curved vein; the recurrent vein is received at the middle of the second submarginal cell, beyond which the cubital vein is thickened; the anal plate is deeply and widely emarginate; the lateral processes very acute.

†† *Peduncle as long as broad.*

Species XX.—*Labidus Romandi*, Shk. (Mon. Dor. p. 17). Rufo-testaceus; vertice badio, stigmate alarum brunneo-fusco, et pedunculo abdominis quadrato-convexo; mandibulis brevibus, tenuibus; abdominis segmentis posticis, subcompressis. Long. corp. lin. 4½. Expans. alar. lin. 7¾.

Inhabits Brazil (Mus. D. Shuckard). Also taken at Canga, in Brazil, on the 4th of November, 1838, during the night, by W. Burchell, Esq. Mr. Burchell possesses a specimen 4 lines long, and with the wings expanding only 7 lines, which I refer to this species, although the anal plate is not exposed, and the wing-veins exhibit the following distinctions, which are, I apprehend, to be regarded as irregularities:—The right fore-wing has four submarginal cells, a small supplemental one (forming a third) being interposed between the ordinary second and terminal cells. This little cell is very narrow in front, but broader behind. The left fore-wing has also four submarginal cells, but here the small supplemental cell is interposed between the ordinary first and second; it is of a triangular form, and does not extend upwards to the marginal cell, the second transverse-cubital vein being in fact furcate at a little distance from the marginal cell.

UNKNOWN SPECIES.

Species XXI.—*Labidus Pertii*, Shk. (Mon. Dor. p. 18).
Syn.—*Lab. Latreillii*, Perty, Del. An. Art. Br. p. 138, t. 27, f. 11.

Obs.—*Dorylus mediatus*, Fabr. Syst. Prez., p. 428. (Labidus? mediatus, Shk. Mon. Dor. p. 18.) preserved in the Royal Museum of Copenhagen, has been examined by Dr. Erichson, who informs me that it is a male Mutilla, having the third joint of the antennæ (instead of the base of the second, as described by Fabricius) ferruginous.

ÆNICTUS, *Shk.*

This genus differs from Labidus in the venation of the wings, and geographical situation; and from Dorylus in the small size of the body, the long curved mandibles, and the slender cylindrical thighs; whilst it is at once separated from Rhogmus by possessing only one recurrent vein.

Mr. Shuckard founded the genus in his Monograph on the Dorylidæ upon two specimens of a single species brought from Poonah, in Bombay, by Col. Sykes. I have, however, long had a note of a second species in the Cabinet of the Linnæan Society, and now possess, by the kindness of W. W. Saunders, Esq., President of the Entomological Society, F.L.S., &c., a specimen of the species described by Mr. Shuckard, taken in Northern India, by Lieut. Campbell.

SPECIES I.—*Ænictus ambiguus*, Shk. (Mon. Dor. p. 24). Rufo-testaceus, pubescens, capite (antennis mandibulisque exceptis) et thorace nigro, mandibulis longissimis; facie carina media subtus furcata, alarum venis stigmateque fuscis, pedunculo profunde canaliculato. Long. corp. fere lin. 4. Expans. alar. lin. 7½. (Pl. 20, fig. C., head.)
Habitat India Orientali, Poonah. In Mus. Sykes, Saunders, et Westw.

SPECIES II.—*Æniotus certus*, W. Rufo-fulvescens, pubescens, capite brunneo-nigro, mandibulis sub-brevibus, stigmate alarum fusco, venis fulvo-fuscis, pedunculo antice angustiori, disco subplano. Long. corp. (abdom. incurv.) lin. 3½. Expans. alar. lin. 7½.
Habitat? In Mus. Soc. Linn. Lond.

Head pitchy or brunneous black, the face redder brown; the antennæ fulvous, with long slender hairs; mandibles short, falcate, and fulvous. The thorax is fulvous, finely setose. The abdominal peduncle is somewhat triangular; the sides rather rounded, and the posterior angles not acute; the sides are slightly elevated, and the disk is nearly flat and not channelled in the middle; the second, third, and fourth segments of the abdomen are of nearly equal size, the fifth is much longer than either of these segments, the sixth is much shorter, and the seventh is about as long as the sixth. The male organs are concealed. The wings are throughout more stained with a light fulvous tint than in Æn. ambiguus. The stigma is fulvous, and the veins are fulvous-brown. There is considerable difference in the position of these veins in the two known species. The cubital vein arises very near the postcostal in Æn. certus, but at a distance from it in Æ. ambiguus, in consequence of which the first cubital cell is smaller than the second discoidal cell in the former, whereas they are of equal size in the latter; this is further increased by the vein which separates the first and second discoidal cells being deflexed at its extremity in Æ. certus, whereas it is straight in Æn. ambiguus, terminating at a greater distance from the extremity of the anal vein; moreover the transverse veins which close the extremity of the cubital and discoidal cells are much more angulated in Æn. ambiguus than they are in Æn. certus.

DORYLUS, *Fabr.*

The species of this genus are confined to Africa and Asia. They are distinguished by possessing very short feet, with compressed femora, two submarginal cells, and only one recurrent vein in the fore wings.

A.—Peduncle cup-shaped, nearly as large as the following segment.

SPECIES I.—*Dorylus nigricans*, Illiger (Fabr. Shk. Mon. Dor. p. 28). Nigricans, brunneo-holosericeus, capite magno, abdominis petiolo acetabuliformi, segmento 2do paullo minori, oculis minutis. Long. corp. lin. 13. Expans. alar. lin. 21½.
Inhabits Sierra Leone.

B.—Peduncle cup-shaped, much smaller than the second segment.

SPECIES II.—*Dorylus helvolus*, Linnæus, &c. (Shk. Mon. Dor. p. 29). Helvolus pilosus; capite rufo, facie opalina convexa, petiolo acetabuliformi, 2do segmento multo minori. Long. corp. lin. 12½. Expans. alar. lin. 21½.
Inhabits the Cape of Good Hope.

SPECIES III.—*Dorylus affinis*, Shk. (Mon. Dor. p. 30). Helvolus pilosus; capite rufo-castaneo; facie plana, petiolo acetabuliformi, 2do segmento multo minori. Long. corp. lin. 10½. Expans. alar. lin. 19.
Inhabits the vicinity of the river Gambia. Differs from the preceding in its smaller size, in the cubital nervure being slightly undulated (instead of straight), as far as the separation of the two submarginal cells and the recurrent nervure, inserted at *fully one-half* of the length of the first of the latter.

C.—Peduncle quadrate, mandibles slender and much acuminated.

SPECIES IV.—*Dorylus glabratus*, Shk. (Mon. Dor. p. 31). Rufo-brunneus, glaber, subrobustus, venis alarum nigris, vertice valde prominente, facie in medio sulcata, mandibulis attenuatis, labro tuberculis binis obtusis instructo et pedunculo abdominis transverso-quadrato. Long. corp. lin. 14½. Expans. alar. lin. 23½.
Inhabits the vicinity of the river Gambia.

Species V.—*Dorylus juvenculus*, Shk. (Mon. Dor. p. 32). Rufo-fuscus, glaber, subattenuatus; capite (antennis mandibulisque castaneis exceptis), et venis alarum nigris, vertice valde prominente, facie in medio sulcata, labro tuberculis binis instructo et pedunculo abdominis quadrato-convexo. Long. corp. lin. 15⅔. Expans. alar. lin. 24.

Inhabits Barbary.

Species VI.—*Dorylus labiatus*, Shk. (Mon. Dor. p. 33). Pallide brunneus, seu rufo-testaceus glaber, facie pilosa, subtuberculata, prominula, in medio profunde sulcata, mandibulis attenuatis, labro tuberculis binis magnis instructo et pedunculo abdominis quadrato vel potius subgloboso. Long. corp. lin. 14¼. Expans. alar. lin. 23.

Inhabits Poonah and Assam.

D.—Peduncle quadrate, mandibles broad and nearly triangular.

Species VII.—*Dorylus orientalis*, Westwood. (Proc. Z. Soc. 1835, p. 72, Shk. Mon. Dor. p. 34). Helvolus pilosus, abdomine glabro, capite rufo, facie in medio sulcata, mandibulis subtrigonis, vena cubitali valde sinuosa, pleuris sericeis et pedunculo abdominis quadrato gibboso; venis binis internis alarum posticarum venis duabus transversis convexis. Long. corp. lin. 12¼. Expans. alar. lin. 19.

Inhabits Bengal.

Species VIII.—*Dorylus longicornis*, Shk. (Mon. Dor. p. 35). Helvolus subpubescens, capite nigro convexo, facie in medio sulcata, mandibulis subtrigonis, pleuris obscuris, vena cubitali subrecta, petiolo abdominis quadrato gibboso. Long. corp. lin. 11½. Expans. alar. lin. 18.

Inhabits Bengal.

Species IX.—*Dorylus attenuatus*, Shk. (Mon. Dor. p. 36). Helvolus vel testaceus subpubescens, capite nigro vel rufo, facie in medio sulcata, mandibulis subtrigonis, venis alarum brunneis vel testaceis, pedunculo quadrato gibboso. Long. corp. lin 10¼. Expans. alar. lin. 15.

Supposed to inhabit the vicinity of the river Gambia.

Species X.—*Dorylus atriceps*, Shk. (Mon. Dor. pl. 37.) Sordide helvolus, glaber, capite (antennis mandibulisque badiis exceptis) atro, facie valde prominente in medio subsulcata, pedunculo abdominis quadrato-gibboso. Long. corp. lin. 9½. Expans. alar. lin. 15½.

From the vicinity of the river Gambia. The mandibles are very broad, with a large obtuse triangular projection at the base within, leaving no space between them when closed, their inner edge acute.

Rhogmus, *Shk.*

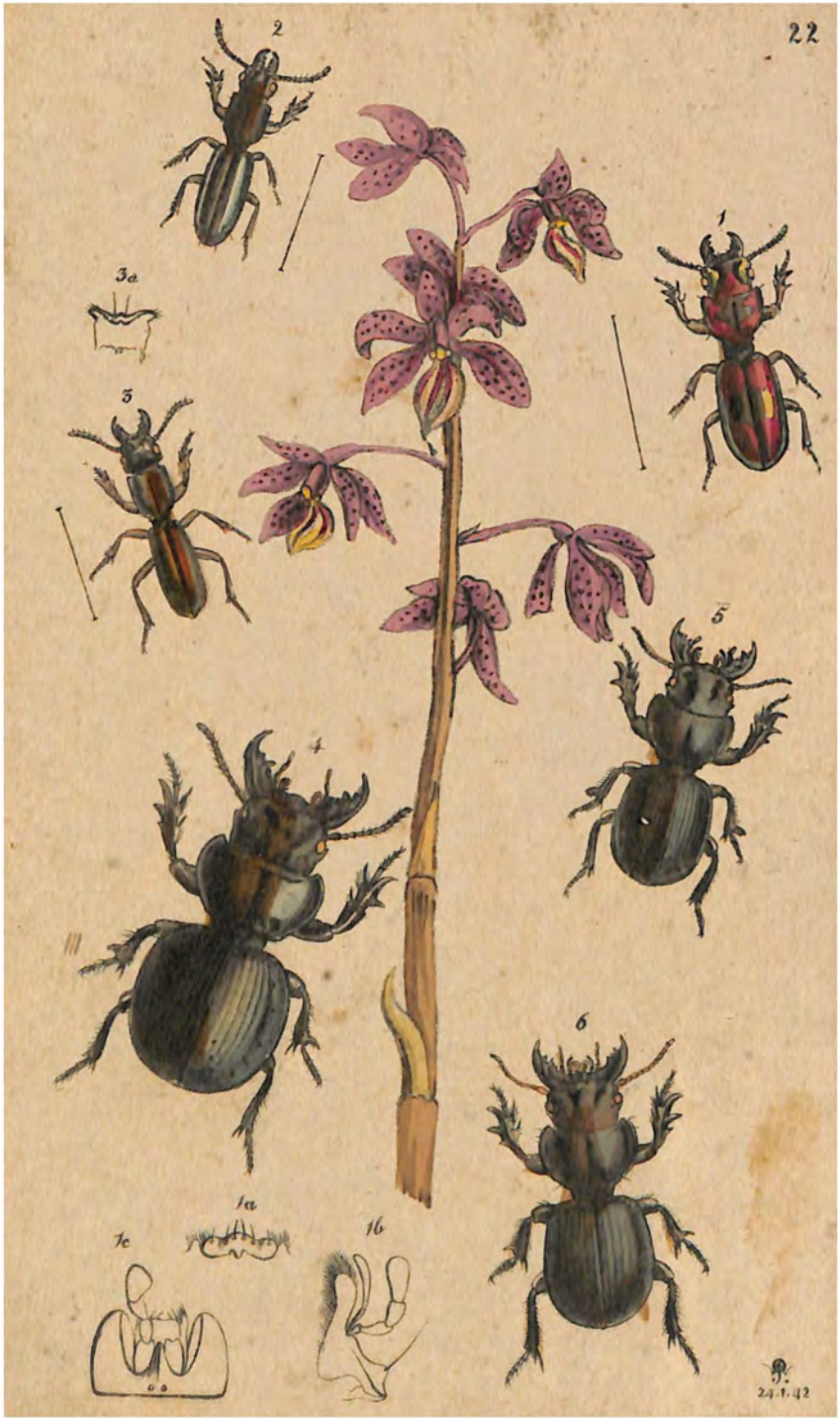
This group has been proposed as a genus by Mr. Shuckard, for the reception of a species which differs from the other Doryli, by possessing two recurrent veins in the fore wings, which have only two submarginal cells; the mandibles are triangular, the feet very short with the thighs broad and compressed, and the abdomen very long and clavate. From the irregularities which so frequently occur in the position of the veins of the wings of the other Doryli, I consider that the first of these characters, which Mr. Shuckard considers as of primary importance and employs in his synoptic table, of too trivial a nature to warrant the generic separation of Rhogmus from Dorylus, whilst its other characters appear to me but specific distinctions.

Species I.—*Rhogmus fimbriatus*, Shk. (Mon. Dor. p. 39.) Helvolus pilosus; abdomine glabro, segmento ultimo supra et duobus ultimis subtus fimbriatis; capite (clypeo antennis mandibulisque castaneis exceptis) nigro, venis alarum brunneis et pedunculo abdominis transverso-quadrato, convexo. Long. corp. lin. 17½. Expans. alar. lin. 22.

Inhabits the Gold coast and the vicinity of the river Gambia.

The splendid Orchidaceous plant figured is the Cattleya Aclandiæ of Lindley, Bot. Reg. v. 26, pl. 48, a recently discovered species inhabiting Brazil.

26.1.42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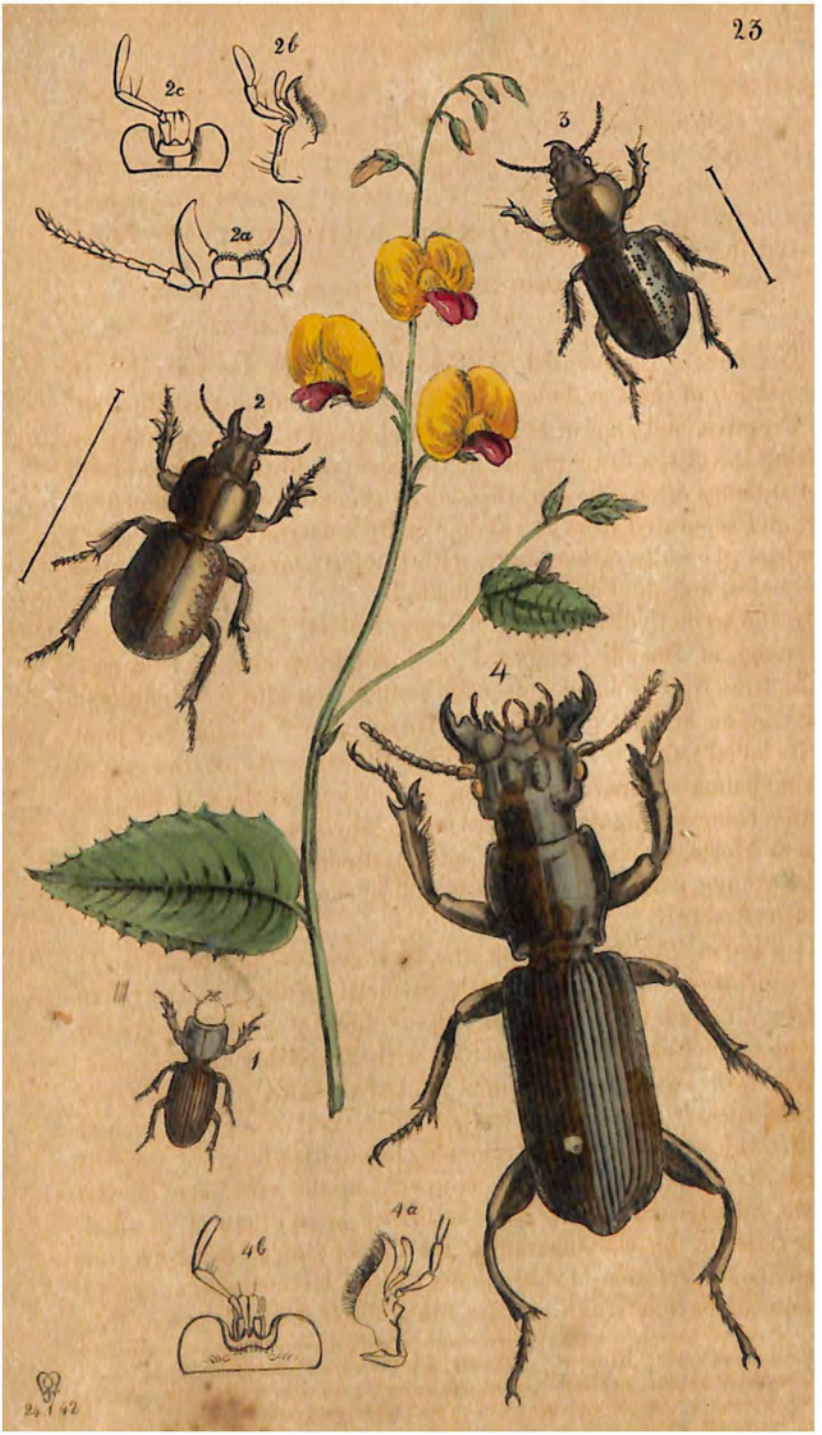
2c
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PLATES XXI, XXII, AND XXIII.

ON THE SCARITIDEOUS BEETLES OF NEW HOLLAND.

The insects represented in these three plates are referable to the section of the Carabidæ, which Latreille denominated Bipartiti or Fossores, and Dejean Scaritides, and which was characterised by having the elytra not truncate at the tips (as in the Brachinides); the antennæ often elbowed, the thorax generally almost semicircular, and separated from the abdomen by a narrowed peduncle and the legs generally rather short, with the fore tarsi not dilated in the males, and the fore tibiæ palmated.

In the second edition of the "Règne Animal" we find the genus Carenum, of Bonelli (composed of a single species, Sc. cyaneus, Fab., from New Holland), placed in conjunction with Enceladus and Siagona, on account of the large triangular form of the last joint of its labial palpi. To these succeed the majority of the genera having palmated fore feet and a long second joint of the antennæ, the section being terminated by a second subdivision, composed of the genera Morio, Ozæna, Ditomus, and Apotomus, in which the fore tibiæ are not palmated, and the second joint of the antennæ comparatively short.

It is impossible, on studying this arrangement, not to arrive at the conclusion that it is entirely artificial: thus, the Australian Carenum (which is the more immediate object of our observations) has no further character in common with Enceladus and Siagona, than in having the dilated terminal joint of the labial palpi; whereas in its general structure, palmated tibiæ, and elongated second joint to the antennæ, it unquestionably belongs to the group typified by Scarites proper. We find, however, in the structure of the mouth, another character, which occurring in an organ of peculiar importance in the classification of the Coleoptera, adds far greater weight to the relation of Carenum with the last-named genus and its immediate relations *. Latreille himself had observed this

* Boisduval (Voy. de l'Astrolabe, p. 23), states that Carenum "a une grande analogie avec les Scarites, les Enceladus, les Pasimaches, les Ozæna, les Clivina et les Morio." He does not, however, describe in what the analogy with which such discrepant genera consists

character, namely, the want of a terminal hook to the maxillæ in Carenum and Pasimachus, which latter, he observes, "se rapproche du dernier (Carenum) relativement aux machoires, qui sont droites et sans crochet terminal" (Règne An. iv., p. 382); but he describes Acanthoscelis, Scarites, Oxygnathus, and the remainder of his first subdivision as having the "machoires arquées et crochues au bout." This is however erroneous, although no subsequent writer on the predaceous beetles has corrected it. I have before me Latreille's own dissections of several of these genera, in all which the maxillæ are obtuse at the tip; and in all the true Scaritides (composing his first subdivision, except Siagona and Enceladus) which I have dissected, I have found the same character *; except in Clivina, which is thus proved (contrary to the arrangements of most Continental authors) to differ from Dyschirius in this important respect.

Until very recently, only one true Scaritideous insect (or rather two species confounded together) had been described by entomologists from New Holland—namely, the Scarites cyaneus of Fabricius, Carenum cyaneum *Bonelli*. Within the last few years, however, descriptions of three other species have been published—namely, Arnidius marginatus *Leach* (described by M. Boisduval); Eutoma tinctilatus, described by Mr. Newman; and Carenum perplexum, by Mr. A. White. Fifteen species are described in the present paper belonging to the first subdivision of Latreille, in addition to three other species which approximate closely to them.

The chief cause of this want of descriptions of Australian Scaritidæ is evidently the great rarity of the insects themselves in that portion of the globe. Dejean, the late possessor of the most extensive collection of Coleoptera formed up to that period, did not possess a single species belonging to this section from Australasia, and of the species now figured in the accompanying plates, the majority are represented from unique specimens; of these also the majority are from the new settlements in the south-western and north-western portions of New Holland; so that we are, I think, fully justified, from the large collections of Coleoptera which have been sent to this country from the older settlements on the south-eastern part of Australia without any Scaritideous insect amongst them, in believing that these insects are either not indigenous to the latter district, or are of extreme rarity.

* Considering the pre-eminently predaceous habits of the true Scaritides, it seems remarkable that the tooth of the under jaws should not be developed.

The species now figured exhibit several peculiarities of importance as contrasted with the other Scaritideous insects. The singular and occasionally brilliant metallic tints of some of the species have hitherto been almost unknown in this section; the dilated form and large size of the three species represented at the bottom of plate 22, and the singular characters of the three insects figured in plate 23, fig. 2, 3, and 4, are also especially worthy of notice.

I now proceed to the description of the Australian species of this section.

CARENUM, Bonelli.

(Syn.—Arnidius, *Leach*, *Bdv.* Eutoma, *Newm.*)

This genus was founded by Bonelli (*Observ. Entomol.* 2nd part, p. 47, and Turin Trans. 1813, p. 479), upon a species which he examined in the collection of the Jardin des Plantes, at Paris, and which he considered as identical with the Scarites cyaneus of Fabricius, from which, however, it is quite distinct. The chief character of the genus, as detailed by Bonelli, consists in the enlarged and triangular form of the terminal joint of the labial palpi, whilst the maxillary palpi are nearly cylindrical. The antennæ are short, with the first joint *apparently** not longer than the second [which is about as long as the third]; the anterior tibiæ are externally dentated; the elytra oblong or oval, soldered together without wings beneath them; the mandibles are also strongly toothed on the inside, the mentum toothed in the centre of its deep emargination. The labrum is transverse but differs in form in different species, being sometimes horizontal, as in Scarites, but sometimes deflexed in front, as in pl. 22, fig. 3 *a*. The antennæ are variable in length, as well as in the relative thickness of the terminal joints; the fore feet also differ in the number of the digitations, and there is also considerable difference in the form and sculpture of the elytra. As however all these insects agree in their more essential characters, I have reduced the genera Arnidius and Eutoma to synonymes, because almost every species presents characters of variation as important as those possessed by the types of the two last-mentioned groups.

Species I.—*Carenum Bonellii*, W. Nigrum, pronoto et elytris viridi latè marginatis, horum carina marginali violacea; disco lævi, punctis duobus versus basin alterisque duobus subapicalibus, pronoto in medio fossula longitudinali et transversè striato, basi utrinque obliquè impresso; tibiis anticis externè bidentatis. Long. corp. (sec. fig. Brullei) lin. 10, lat lin. 3. Mus. Jard. des Plantes.

* I say *apparently*, because in most of the species the anterior lateral angles of the head are produced *over* the base of the basal joint of the antennæ, causing it to appear shorter than it really is.

Syn.—*Carenum cyaneum*, Bonelli, op. cit. (exclus. syn. Fabr.) *Brulle*, Hist. Nat. Ins. t. 5, p. 63, pl. 2, fig. 6 (figured from the original specimen described by Bonelli). *Boisduval*, Voyage de l'Astrolabe, texte p. 25.

Species II.—*Carenum marginatum*, W. (Plate 21, fig. 1.) Nigrum, nitidum, lævc; pronoto elytrisque marginatis, margine viridi; palpis picois, elytris ovalibus punctis duobus subapicalibus, tibiis anticis externè dentibus duobus magnis alterisque duobus minutis mediis. Long. corp. lin. 10 (=lin. 12, mens. gall.), lat. elytr. lin. 4. Mus. Brit. Hope. Dupont.

Syn.—*Arnidius marginatus*, Leach's MSS. in Mus. Brit. *Boisduval* Voy. de l'Astrol. part. 2, p. 23. *Laporte*, Hist. Nat. Ins. Col. vol. 1, p. 66.

This is closely allied to the preceding species, from which it is distinguished by its longer and broader form, and by having only one pair of deep punctures on the elytra, near the tip. The head has two deep longitudinal impressions between the eyes, each forked in front with a small puncture near the middle of the fork; the hind part of these impressions is directed outwards. The labrum has three sinuses along its front edge, the middle one being the widest, but not so deep as the two lateral ones. The right mandible has three teeth in the middle, the left one two; the labial palpi have the middle joint furnished with many short bristles. The antennæ are rather long and slender, the basal joint largest, the second slightly shorter than the third. The pronotum is very much rounded at the sides, the hind edge scarcely produced, and with a very slight dorsal impression; the elytra are smooth, not very shining, with slight traces (under a lens) of rows of punctures, and each is marked near the tip with a deep puncture. The slender margin of the pronotum and elytra is bright green, and within it, in the elytra, are a series of punctures; the humeral angles are rounded off, with a slightly-elevated angle. The anterior tibiæ have two large, and two or three very minute spines on the outside.

Species III.—*Carenum perplexum*. (Pl. 21, fig. 2.) C. nigro-cyaneum, elytris subviridescentibus, basi subquadratis, dorso impunctatis; tibiis anticis extus bispinosis. Long. corp. lin. 8. Lat. elytr. lin. 2½. Mus. Brit. (Inhabits King George's Sound.)

Syn.—*C. perplexum*, White, in App. to Grey's Voy. 2, p. 456.

This species differs from C. Bonellii, marginatum and Fabricii (cyaneum F.), in having no deep punctures on the disc of the elytra. The head is broad, with the anterior angles very prominent. The eyes very globose, between which are two deeply-impressed striæ (posteriorly converging), and suddenly bent into an angle, the front part running towards the outer base of the mandibles, with a deep setigerous puncture on each side. The pronotum is much narrowed behind, and the elytra long, ovate, and sub-depressed, nearly truncate at the base, the humeral angle forming a kind of tooth; within the dilated margin of the elytra are a series of punctures. The fore tibiæ are externally armed with two strong teeth. The head is black, the pronotum blue-black, and the elytra tinged with greenish blue. The antennæ are as long as the pronotum and half of the head, and the labial palpi have the last joint small and triangular.

Species IV.—*Carenum politum*, Hope, MSS. (Pl. 21, fig. 3.) C. nigrum nitidum; pronoto lato, dorso longitudinaliter canaliculato basique bi-impresso lateribus rotundatis et cum elytris marginatis, margine læte cæruleo; horum disco impunctato. Long. corp. lin. 7¾. Lat. elytr. lin. 3. Mus. Hope, and Entomol. Club. (Inhabits Van Diemen's Land.)

This species differs from the last (with which it agrees in the impunctate disc of the elytra) in the broad and rounded outline of the pronotum and elytra, as well as in its colours, being shiny black, except the reflexed margins of the pronotum and elytra, which are of a bright blue. The head has two deep channels on the crown (posteriorly diverging), and forked in front; the right mandible has three, and the left one two obtuse teeth in the middle. The antennæ are slender but compressed. The pronotum is broad, with the sides margined and rounded, the posterior angles being slightly emarginate, as well as the middle of the hind margin. The disc has a deeply-impressed longitudinal line, and near the hinder angles is an oblique impression. In one specimen there are also two round impressions near the front margin which are sometimes wanting. The elytra are broadly ovate with the anterior angles rounded off, very shining, the disc impunctate, but with a series of impressions within the lateral margins. The fore tibiæ have two large teeth on the outside, beneath which are two minute ones.

Species V.—*Carenum smaragdulum*, Hope, MSS. (Pl. 21, fig. 4.) C. pronoto transverso elytrisque nitidissimè æruleo viridibus, his versus apicem bipunctatis, tibiis anticis extus tridentatis. Long. corp. lin. 8½. Lat. pronoti lin. 3. Mus. Hope. (Inhabits the Swan River.)

This very handsome species has the head flatter than any of the preceding, and black, except towards the neck, which is slightly tinged with green, which colour is splendidly exhibited by

the pronotum and elytra, the margins of which are more elevated with a bright golden green hue. The head has two deeply-impressed lines on the crown forked in front; the right mandible has two teeth in the middle, the lower one being very large, and composed of three united together; the left mandible has two teeth within, between which is a very small one. The antennæ are as long as the pronotum and half of the head, slender and not compressed, with the second joint a little shorter than the third. The pronotum is very broad and short, with the sides straighter than in any of the preceding species, and more strongly margined, the hind margin almost forming a regular curve. The elytra are ovate, with the humeral angles rounded, but with a small elevated obtuse tooth-like angle; within the lateral margin is a series of punctures. The legs are black, the anterior tibiæ with three teeth on the outside.

Species VI.—*Carenum* (cyanoum) *Fabricii* (Pl. 21, fig. 5). C. nigro-cyaneum glaberrimum, elytris subpurpurascentibus, et versus basin et apicem bipunctatis, tibiis anticis extus tridentatis. Long. corp. lin. $5\frac{1}{2}$. lat. elytr. lin. 2. Mus. Soc. Linn. Lond. (olim. Banks.)

Syn.—*Scarites cyaneus*, Fabr. Ent. Syst. 1, p. 95. Syst. El. 1, p. 125. Oliv. Ent. 3, No. 36, p. 11, pl. 2, fig. 17. Laporte, Hist. Nat. Ins. Col. 1. p. 66. (Carenum c.) Boisduval, Voy. de l'Astrol. p. 23, excl. syn. Bonollii et Brullei.

"Caput magnum, exsertum, cyaneum, fronte lineis duabus impressis," postice divergentibus. "Mandibulæ exsertæ, nigræ, dentatæ; antennæ nigræ; thorax canaliculatus, cyaneus, postice rotundatus," marginatus, angulis posticis parum emarginatus. "Elytra thorace addito capite breviora, connata," purpurascenti—"cyanea, glaberrima, basi retusa," disco versus basin et apicem bipunctata, marginata; intra marginem lateralem parum virescentia, serieque punctorum impressa. "Pedes nigri tibiis anticis" extus tri-"dentatis."

The above additions to the original Fabrician description (which is inclosed in inverted commas) are supplied, together with the accompanying figure, from the original unique specimen still in the possession of the Linnæan Society. The species described by Bonelli, and supposed by him to be identical with the present species, being quite distinct, I have applied to it the name of C. Bonellii; and in order to avoid any further confusion between the two species which have received the same specific name, I have also designated the present species with the name of its original describer.

Species VII.—*Carenum Spencii* (Pl. 21, fig. 6, C.) Nigrum, subopacum, tibiis anticis extus tridentatis, elytris excavationibus numerosis rotundatis, triplice serie in singulo elytro ordinatis, spatiis intermediis elevatis. Long. corp. lin. 9. Mus. Molly. cum hoc nomine inscriptum. Inhabits New Holland.

Syn.—*Carenum Spencii*, Westw. in Taylor's Annals of Nat. Hist. Oct. 1841, p. 123.

The head in this very distinct species has two impressed lines on the crown, the pronotum has the posterior angles rather strongly emarginate, the disc with a deep impressed line, and near the fore margin is a row of fine longitudinal strigæ. The elytra have an indistinct row of punctures on each side of the suture, succeeded by three rows of large deeply excavated round but irregular impressions, the space between the rows being elevated; the sides are margined, and within the margin is a row of deep small punctures. The fore tibiæ are very strongly palmate, having three teeth on the outside.

Species VIII.—*Carenum gemmatum*, Hope, MSS. (Plate 21, fig. 7, 7 a, 7 b, and 7 c.) C. viride, elytris cupreo-tinctis, punctis magnis distantibus tripliee serie in singulo elytro ordinatis, tibiis anticis dentibus duobus magnis alteroque minuto externis. Long. corp. lin. $4\frac{1}{2}$; lat. elytr. lin. $1\frac{1}{4}$. Mus. Hope. Inhabits Port Essington.

This beautiful little insect is most nearly allied to C. Spencii, but is, however, quite distinct. The head is black in front but green behind; it has two deep impressed lines diverging behind, united with a slightly-waved impressed line which runs across the head behind the eyes; behind the labrum the two lines are strongly angulated with a small puncture near the angle; the labrum is horizontal, with the middle emargination rather deep (7 a, front of head; 7 b, maxilla; 7 c, labium). The right mandible has three nearly equal teeth in the middle; the left one has also three, but the middle one is very small. The antennæ are very short, with the terminal joints broad and compressed; the second and third joints are very nearly equal in length. The thorax has the lateral margins not much rounded, and the hind margin nearly forms a regular curve; the disc has a central impressed line, and there is an oblique impression near the posterior angles; the elytra are more oblong than in the preceding species; the suture is deeply impressed, and each elytron has three rows of deep round impressions placed at unequal distances apart; the two rows next the suture having four, and the one next the sides only two impressions: the fore tibiæ have two large and one very minute teeth on the outside.

Species IX.—*Carenum sumptuosum*, Hope MS. (Plate 22, fig. 1, and 1 a, 1 b, and 1 c.) C. angustius nigrum, igneo colore varium, elytris lævibus punctis duobus versus basin alterisque duobus subapicalibus, tibiis antice externe bidentatis. Long. corp. lin. 10; lat. elytr. lin. 3. Mus. Hope. (Inhabits Port Essington, on the north coast of New Holland.)

This is the most splendid Scaritideous insect hitherto discovered. It is of a much narrower form than any of the preceding species. The head is broad, the middle and fore margin of the upper side blue-black, with a fiery copper-coloured patch on each side changing to green; the narrow hind part of the head is also fiery copper-coloured. The crown of the head has two deeply-impressed simple lines much diverging behind, where each unites with another impressed line margining the eyes. The labrum (fig. 1 a) has the middle lobe prominent. The right mandible has four teeth, the first and second distant, with a minute tubercle between them, and the third tooth is small. The left mandible has three teeth, the middle one being small. The pronotum is about as broad as long, with the hind angles and the middle of the hind margin somewhat emarginate; the disc is blue-black, with an impressed line, but each side, and behind, is coloured with igneous copper, margined with golden-green, which colours extend inwards from the front angles to a point. The elytra are elongate subcylindric, with the suture deeply impressed, the anterior angles rounded off, the disc smooth, with two deep punctures near the base and apex; they are of a similar igneous copper-colour, margined with green, having a large blue-black central patch; within the lateral margins of the elytra are a series of small elevated punctures. The legs are short, with the fore tibiæ externally bidentate. The head beneath, and two patches on each of the abdominal segments, are coppery and golden-green.

Species X.—*Carenum megacephalum*, Hope, MSS. (Plate 22, fig. 3, and 3 a). C. cylindricum nigrum nitidum, capite maximo, pronoto viridi, elytris lævibus cupreo-viridibus, tibiis anticis dente unico apicali externo. Long. corp. lin. 8, lat. elytr. lin. $1\frac{3}{4}$. Mus. Hope. (Inhabits Port Essington.)

This species is remarkable for the large size of its nearly square head, of a shining black colour, with a deeply-impressed short line on each side, running from the anterior angle towards the crown, and with a circular impression on each side between the eyes; behind which the head is suddenly contracted into a neck; the mandibles have three or four not very strong and irregular teeth; the labrum is deflexed in front (fig. 3 a), its free margin being produced in the centre and slightly notched; the outer maxillary palpi are scarcely longer than the inner ones, rather thick, with the last joint very short and triangular; the mentum and labial palpus is like that of C. gemmatum. The antennæ are rather long, with the terminal joints slightly compressed, the terminal joint being longer than any of the preceding. The pronotum is considerably longer than broad, the sides parallel in front, but narrowed off behind; it is cylindrical, and of a bright green colour, with a slight dorsal impressed line. The elytra are narrowed in front, gradually but slightly increasing in breadth nearly to the tips. They are of a splendid coppery green, with the suture much depressed, the sides margined, the disc smooth; close to the base are a few punctures, forming a small oblique line. The legs are short and black, the fore tibiæ having only a long single apical spine on the outside, a slight bulging out of the edge of the limb indicating the situation of the second ordinary spine.

Species XI.—*Carenum tinctilatum*. (Plate 22, fig. 2.) C. cylindricum nigrum, elytris lateribus cæruleis, punctisque duobus subapicalibus, tibiis anticis extus bidentatis. Long. corp. lin. 8, lat. elytr. lin. 2. Mus. Entomol. Club.

Syn.—*Eutoma tinctilatus*, Newman. Ent. Mag. 5, 171.

This is the most regularly cylindrical species of the genus. It is of a shining black colour, with the margins of the elytra brilliant blue. The head has two deep channels on the crown posteriorly diverging, and anteriorly furcate, with a minute puncture in the fork. The anterior angles of the head are obliquely truncate, and behind the eyes the head is gradually narrowed into a neck; the antennæ are considerably longer than the head, being about equal to it and the mandibles in length; the terminal joints are compressed and gradually dilated, the terminal joint being the largest and oval. The clypeus terminates in two small central and two large lateral teeth, the labrum being deflexed and not visible from above. Each mandible has three obtuse teeth in the middle. The maxillary palpi have the terminal joint but slightly securiform; the terminal lobe of the maxillæ is not furnished with an apical curved tooth. The labial palpi have the terminal joint securiform. The pronotum is smooth, with the front margin straight; the sides are also parallel for about two-thirds of the length of the pronotum; they then become gradually narrowed and rounded off, the lateral and hind

margins being margined, with two or three setigerous punctures wide apart within the margin. The disc of the pronotum is marked by a slender impressed line. The meso-thoracic peduncle is slender and narrowed behind; the elytra are as broad as the widest part of the head; they are smooth and shiny, with the suture slightly impressed, the anterior and posterior angles being equally and gradually rounded off; each elytron is marked with a deep puncture near the tip, and is margined with a beautiful blue tinge; the margin itself is raised, and within it is a series of small setigerous punctures. The legs are short, and the anterior tibiæ have two very strong teeth on the outside.

SCARITES, *Fabricius.*

Species I. (XII.)—*Scarites Bacchus*, Hope, MSS. (Plate 22, fig. 4). Sc. niger nitidus latissimus, capite puncto circulari medio foveisque duabus lateralibus impressis, elytris circularibus tibiisque intermediis dente acuto subapicali externe armatis. Long. corp. (e labro ad anum) lin. 19, lat. elytr. lin. 9. Mus. Hope. (Inhabits Swan River.)

This fine species entirely recedes from the ordinary form of the genus in its broad outline and circular elytra. It is black and shining. The head is broad, and produced into an angle outside the eyes. It has a round impression on the crown, with an oval fovea on each side extending nearly to the base of the mandibles, terminating in a point on the crown. There are also two smaller impressions in the front of the clypeus; the right mandible is 3-dentate, the inner tooth almost obliterated; the left mandible is 4-dentate, the inner tooth large; the pronotum is broad, and margined with a rather deep central longitudinal sulcus, terminating in a cordate impression, and with an oblique impression at each hinder angle. The elytra are circular subconvex, with the suture impressed; each is marked with six almost obsolete simple striæ; within the raised lateral margins is a numerous series of small punctures, and at a small distance from the sides, another row of six punctures placed wide apart; and there are three other punctures forming an oblique line towards the extremity of the suture. The anterior tibiæ are externally 3-dentate, and the middle tibiæ are furnished on the outside near the tip with a strong sharp slightly-curved spur, above which the limb is finely serrated on the outside.

Species II. (XIII.)—*Scarites Lenæus*, Westw. (Plate 22, fig. 5). Sc. niger nitidus latus, capite inter oculos foveis duabus ovalibus impressis et strigosis, pronoto utrinque versus angulos anticos puncto impresso, elytris obovatis, tibiisque intermediis dente magno curvato oblique truncato subapicali armatis. Long. e labro ad anum lin. 14½. Lat. elytr. lin. 5½. Mus. Soc. Linn. Lond. (Inhabits New Holland.)

This species is much smaller and narrower than the preceding; the head is angulated outside the eyes, between which are two oval impressed foveæ, which, as well as the front of the head, are strongly crenulated. The right mandible has two compound teeth, the front one formed of two projections, and the hind one of three, of which the middle one is very small. The left mandible has three teeth, the middle one small, and has a small projection in front of the large anterior tooth. The pronotum has a longitudinal sulcus transversely crenulated, and has a small impression on each side towards the anterior angles, and an oblique fovea at each of the hinder ones. The elytra are obovate, each having seven slightly punctated striæ; there is also a numerous series of punctures within the lateral margin, at a short distance from which is another row of six punctures at unequal distances apart, and with three other punctures forming a nearly straight line towards the extremity of the suture on each side. The anterior tibiæ are tridontate, and the middle tibiæ are armed near the tip on the outside with a thick curved spur obliquely truncate at the tip.

Species III. (XIV.)—*Scarites Silenus*, Hope, MSS. (Pl. 22, fig. 6.) S. niger nitidus latus, capite inter oculos foveis duabus profundis punctoque utrinque pone oculos; pronoto vix foveato, elytris obovalibus sublævibus, tibiisque intermediis dente acuto subapicali externe armatis.... Long. corp. (maud. excl.) lin. 13⅓—15¾; lat. elytr. lin. 5¾—6¼. Mus. Hope. (Inhabits Swan River.)

This species is closely allied to the last, but differs from it in the strong but acute tooth on the outside of the middle tibiæ, and in the want of crenulations on the forehead, pronotum, the punctures of the elytra, &c. It is black and shining, the head not angulated beyond the outline of the eyes. The crown of the head in front has two deep oblique oval impressions extending nearly to the base of the mandibles, and two punctures close to the fore margin of the clypeus, and one on each side near the hind angles of the eyes. The pronotum has a central sulcus terminating at a short distance in front of the hind margin, and the hind angles are scarcely foveated. The elytra are broad and obovate, with the rudiments of three or four very slight striæ on each, which are lost at a distance from the apex of the elytra. Close to

the lateral margin is a row of numerous minute punctures, and within these another row formed of six punctures placed at irregular distances, with two other punctures on the disc of each, near the extremity. The anterior tibiæ are externally 3-dentate, and the middle tibiæ armed on the outside with a long acute and slightly-curved spur.

Species IV. (XV.)—*Scarites sculptilis*, Westw. (Pl. 23, fig. 1.) C. niger subnitidus, pronoto subquadrato, angulis posticis rotundatis, elytris oblongo-ovalibus, singulo striis 5 profundis simplicibus, apicibus inter strias punctatis. Long. corp. (capito omisso) lin. 7½, lat. elytr. fere lin. 3. Mus. Soc. Linn. Lond. (Inhabits Van Diemen's Land.)

This species is elongated and black. The head is wanting in the only specimen I have seen. The pronotum is subquadrate, with the hind angles rounded off, and with a longitudinal central sulcus; the elytra are oblong-subovate, each with five deep simple striæ, of which the second and fifth and the third and fourth are united together at the tips, where they are dilated and where the spaces between the striæ are marked with deep impressed round punctures; there is also a fine raised submarginal line, outside of which is a row of minute punctures.

If the Carenums with their splendid colours and dilated palpi, and the broad forms of the Scarites above described, have not sufficiently indicated an Entomological Fauna quite distinct from that of any other portion of the globe, the two insects next to be described will, at least, abundantly prove this. It is true that in Oxystomus, Oxygnathus, &c., genera belonging to the typical group of Scaritidæ, we find the mandibles not furnished with teeth; but in all other respects these insects do not differ from the others. The two insects in question, however, not only possess unarmed mandibles, but the structure of the upper lip, maxillæ and labium are those of Feronideous insects. It is true that the antennæ are very short, with the second joint as long as the third; the anterior tibiæ externally palmate, the intermediate tibiæ externally angulated at the tip, and the abdomen partially pedunculated; in all which respects they agree with the absolute characters of the true Scaritidæ. It is also true that we find a porrected labrum and maxillæ with the tips acute in Siagona and its allies, but they have a depressed body, short dentate mandibles, and securiform labial palpi, long antennæ, with a short second joint, and simple anterior tibiæ, &c. Ditomus and its allies, which constitute another aberrant section in the family, have also very acutely-lobed maxillæ, unarmed mandibles, a convex body, and subpedunculated abdomen; but these have also long antennæ with the second joint short, very minute bilobed labrum, and simple fore feet, whilst the remaining aberrant section of the family typified by Morio (to which figure 4, in plate 23, also belongs), in its flattened form, unpalmated feet, dentate mandibles, strongly bilobed labrum, short second joint to the antennæ, narrowed neck, &c., offers still stronger distinctions from the two insects in question, which appear to me to constitute a distinct section, as well as genus, in the family, which may be thus characterised.

GNATHOXYS.

Caput pronoto multo angustius, pone oculos sensim paullo latius, ante oculos parum attenuatum; labrum (fig. 2 *a*) porrectum angustum, angulis anticis rotundatis, in medio plus minusve emarginatum. Mandibulæ capite paullo breviores subcurvatæ margine interno acuto, edentato, apiceque acuto. Maxillæ (fig. 2 *b*), elongatæ lobo apicali acuto curvato, intus setoso, palpi maxillares breves, articulo ultimo præcedenti parum crassiori. Mentum (fig. 2 *c*), dente medio nullo armatum, palpi labiales maxillaribus longitudine æquales, articulo ultimo vix præcedenti crassiori; antennæ (fig. 2), capite vix longiores, gracillimæ, articulis 2do. et 3tio., subæqualibus et sequentibus longioribus. Pronotum convexum, postice parum lobatum. Elytra e pronoto pedunculo brevi subremota, convexa, apice haud truncata. Pedes breves, sat robusti; tibiis anticis extus dentatis, intus emarginatis et calcaratis, tibiis intermediis ad apicem in spinam externe productis.

Species I.—*Gnathoxys granularis*, Hope, MSS. (Pl. 23, fig. 2 and 2 *a*, 2 *b* and 2 *c*.) Niger subnitidus, æneo parum tinctus, pronoto subquadrato, elytrorum lateribus et apice granulatis, disco haud strinto-punctato. Long. corp. mand. exclus. lin. 13. Lat. elytr. lin. 5. Mus. Hope. (Inhabits Port Essington.)

The general colour is black, tinged, especially at the sides of the elytra, with brassy. The labrum is formed of two lobes rounded in front (fig. 2 *a*). The clypeus has an arched impression in front, succeeded by a transverse line, from which run two straight longitudinal impressions, which do not extend to the middle of the crown of the head. The antennæ are very slender. The pronotum has the sides nearly straight and parallel; the anterior angles somewhat advanced in front and narrowed off, as well as the hind angles, which are rounded off; the hind margin forms a lobe, and is separated by a transverse impression; it has a slight impressed middle line, its sides are margined and crenulated; the elytra are rather dilated behind, with the base, sides, and apex thickly covered with minute raised granules, which also reach a short distance along the suture, the disc not being marked with striæ, or punctures. The fore legs are externally 3-dentate, the 3rd tooth being near the base, and the middle one nearly in the centre of the limb; the two basal joints of the fore tarsi have the outer angles produced into an acute point, the two following joints have the fore angles equally acute. The middle tibiæ have the apical external angles produced into an obtuse spine, above which the outer edge of the limb is serrulated. The middle and hind tarsi are alike, and not dilated.

Species II.—*Gnathoxys irregularis*, Hope, MSS. (Pl. 23, fig. 3.) Niger subnitidus, pronoto rotundato, angulis anticis haud porrectis, elytris irregulariter punctato-striatis apiceque granulatis. Long. corp. lin. 8½ (excl. mand.). Lat. elytr. lin. 3½. Mus. Hope. (Inhabits Port Essington.)

This species is black with a slight cyaneous tint. The labrum is but slightly emarginate in the centre in front, with the sides rounded; the antennæ are very short and more moniliform than in the preceding; the clypeus has a rather deep, short central sulcus, terminating in a transverse line, behind which are two longitudinal impressions not reaching to the middle of the crown of the head. There is also a transverse slightly-impressed line running across the head behind the eyes. The pronotum has the sides rounded, the anterior angles not porrected, and the hind margin not so much produced as in the preceding; there is a slight impressed line down the centre of the pronotum. The elytra are short, with the sides parallel, the humeral angles rounded off; on each side of the suture is a row of impressed punctures placed irregularly; then follow three double, but interrupted, rows of irregular punctures, the margin itself being more closely punctured, and the apex granulated. The anterior tibiæ are not so strongly dentate as in the preceding, and the apical tooth of the middle tibiæ is not so large.

The remaining figure in Plate 23 (fig. 4, and 4 *a*, and 4 *b*) represents a gigantic Australian species which has been already figured and described by Schreibers, in the "Transactions of the Linnæan Society," vol. vi. pl. 19, figs. 15–19 (details), and pl. 21, fig. 10, under the name of Scarites Schroeteri; and by Laporte, in his "Etudes Entomologiques" and "Histoire Naturelle des Insectes

Coléoptères," vol. i. p. 69, pl. 5, fig. 1, under the name of Hyperion Schroteri. As, however, that generic name had been long previously used by Macleay for another Carabideous genus in the "Annulosa Javanica," and as Latreille had also previously employed the name of Heteroscelis (which was given to it by Dupont and Boisduval) for a genus of Cimicidæ, I proposed to name it in my "Modern Classification of Insects" (vol. i. p. 88),

CAMPYLOCNEMIS SCHROETERI, W.,

in allusion to the singular character of the hind tibiæ being curved. The figures which have been given of this insect are so rude and the trophi so indistinctly represented, that I have thought it would add to the interest of this paper to refigure it with details from a fine specimen, now, I believe, in the collection of Mr. Norris. Its form is very interesting, being most nearly related to Morio of all the hitherto described Scaritideous genera; from this genus, however, it differs in the smaller-sized mentum, and in the much more strongly toothed mandibles. We, however, find in Morio traces of the structure of the apex of the anterior tibiæ represented in figure 4. Catadromus, which also occurs in New Holland, seems also more nearly allied to it than Stomis and Poecilus, between which it was arranged by Laporte in his "Etudes Entomologiques."

The Australian plants represented in Plates 21, 22, and 23, are Bossiæa rufa, Dipodium punctatum (one of the Orchidaceæ) and Chorizema cordatum; the last species having been recently imported from Swan River.

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PLATE X IV.

ILLUSTRATIONS OF SOME GENERA BELONGING TO THE FAMILY CICADIDÆ.

In the later works of Latreille the species of the genus Cicada, as restricted by Olivier to the well-known musical species (or the Tettigonia of Fabricius), were proposed to be divided into two genera, viz., Cicada, in which the musical apparatus of the males is concealed by plates; and Tibicen, in which the first segment of the abdomen exhibits on the upper side two slits exposing this apparatus, composed of C. hæmatodes, Oliv., and some other species. All these insects are at once distinguished from the remainder of the Linnæan Cicadæ by having three ocelli on the crown of the head, and antennæ composed of at least six joints.

Dr. Burmeister, in the volume of his valuable "Handbuch der Entomologie" treating upon the Linnæan Hemiptera, has not adopted the arrangement of Latreille, but unites all the Cicadæ into one genus distributed into various divisions and subdivisions; to one of the latter of which, composed entirely of American species, he has applied the name of Tibicen, with the character "Fusse zweigliedrig," whilst C. hæmatodes (the true type of Latreille's proposed genus), and other species having the tarsi 3-jointed, he has arranged in other divisions. Dr. Burmeister has also described a new and most interesting insect, under the name of

HEMIDICTYA FRONDOSA (Plate 24, fig. 3),

constituting the passage between the typical Fulgoræ and the true Cicadæ, agreeing with the former in having the hind part of the fore wings very much reticulated, and with the latter in having the basal portion like parchment, and with very few veins. The species is a native of Brazil, the unique specimen in the Royal Museum of Berlin having been collected by Langsdorf, in the neighbourhood of Rio. The accompanying figure is from a slight sketch made by myself, at Berlin, in 1835, from the specimen in question. It is not so precise in its details as I could have wished, but is correct in its general character. With the exception of this and the species described below, we find the veins of the fore wings in all the Cicadæ thus distributed:—A simple vein is emitted from the place of the stigma, beyond which another much shorter, also simple, vein is perceived. The mediastinal vein is united with the costa. The postcostal vein is

furcate at a short distance from the base of the wing, each furcation also becoming furcate beyond the middle of the wing; the median vein is single, but emits a branch, which runs to the extremity of the anal vein; a few short transverse or oblique veins connect several of these longitudinal veins together, forming but a very small number of cells.

There is, however, a fine species which inhabits Nepaul (where it was discovered by the late Major-General Hardwicke), and other parts of India, which although agreeing with the typical Cicadæ in general form and structure, has the fore wings very much reticulated, the postcostal and median veins being multifurcate, not only in the apical part, but also in the more coriaceous basal portion, the furcations being frequently united by short transverse veins. In the formation of the musical apparatus of the male and its opercula, this species does not differ from C. fasciata; but on account of the difference which it exhibits in the structure of its wings from the true Cicadæ, I have regarded it as a distinct sub-genus, under the name of—

POLYNEURA DUCALIS, *Westw.* (Plate 24, fig. 2.)

C. (P.) nigra, pronoti marginibus antico et postico (latiori) flavidis; alis anticis brunneis flavo-venosis, posticis fulvis; pedibus nigris femoribus (nisi apice) rufis. Long. corp. unc. 1¼. Expans. alar. ant. unc. 4¼.

Mus. Brit. Hope. Westw. (Inhabits the East Indies.)

A figure of this insect, with the wings expanded, has been published in Jardine's Naturalist's Library (Introduction to Entomology, pl. 18, fig. 1).

The two insects above described agree in having the basal portion of the fore wings separated from the apical and more membranaceous part. The remaining insect, figured in plate 24, differs from them both in having homogeneous fore wings, although in the slight veining of the basal part of these wings, and the somewhat hexagonally areolated apical part, it agrees with Hemidictya.

I am indebted to J. Curtis, Esq., F.L.S., for a knowledge of this interesting Australian novelty, by whom it has been proposed to be named—

CYSTOSOMA SAUNDERSII. (Plate 24, fig. 1, and details.)

Caput parvum, antennæ mutilatæ. Promuscis ad basin femorum intermediorum extensa. Pro- et meso thoracis dorsum fere ut in Cicada maculata formatum. Epimera metathoracica mediocria, medium segmenti basalis abdominis infra haud tegentia (fig. 1 *e*). Tympana musicalia lateralia (fig. 1 *d*), omnino detecta valde convexa, transverse striata. Abdomen maris maximum valde inflatum, organa genitalia maris parva exserta (fig. 1 *a*, segmenta apicalia abdominis infra visa; 1 *b*, genitalia subtus; 1 *c*, eadem e latere visa). Pedes breves. Alæ anticæ homogeneæ, subopacæ ultra medium valde subhexagonaliter areolatæ. ♀ incognita.

C. Saundersii. Pallide lutea costa alarum anticarum albida. Long. corp. fere unc. 2. Expans. alar. unc. 3¾. Mus. Curtis. (Inhabits New Holland.)

The plant is the Lobelia hypocrateriformis *R. Br.*, a native of the South Coast of New Holland. Lob. ramosa *Benth.* (figured in my second plate under the name of L. gracilis) is a native of Swan River, whence it was introduced in 1837.

ENTOMOLOGICAL INTELLIGENCE, &c.

(No. V.)

DEATH OF PROFESSOR AUDOUIN.—It is with the most unfeigned regret that I record the decease of my friend Jean Victor Audouin, M. D., Member of the Institute of France (Academie des Sciences) and of the Legion of Honour; Professor at the Museum of the Jardin des Plantes: Member of the Société Royale d'Agriculture; of the Philomatic and Entomological Societies of Paris; of the Academy of Sciences of Stockholm; of the Imperial Society of Naturalists of Moscow; of the Royal Academy of Turin; of the Lyceum of New York; of the Society of Natural Sciences of Geneva; of the Academy of Philadelphia; of the Natural History Societies of Hartford, Mauritius, and Hall; of the Academy of Georgofili, of Florence; of the Agricultural Society of Turin; and of numerous provincial French Societies for the promotion of Natural Sciences; of the Geological Society of London, and Honorary Member of the Entomological Society of London.

This distinguished naturalist departed this life on the 9th of November, 1841, in the prime of life, aged 44 years, having been born on the 27th of April, 1797, at Paris.

Destined by his family for the profession of the law, his zeal for the cultivation of natural history induced him to turn his attention to the more congenial study of medicine, which however served only as a more ample base for the anatomical investigations of the Annulose Animals which he undertook, and which were at once duly appreciated by Cuvier, Geoffroy Saint-Hilaire, and Latreille, and which naturally led to still more elaborate researches.

His first memoir on the anatomy of the parasitic Larva of Conops appeared in 1818, he being then 21 years old. The memoirs which he published between this time and 1826 manifested a more profound generalised knowledge of the structure of the whole annulose sub-kingdom than is to be met with in the works of any previous writer, not even excepting Savigny (Mémoires sur les Animaux Invertèbres), Latreille (Mémoires published in the Annales and Mémoires du Museum), Cuvier, and Saint-Hilaire.

In 1826 he commenced the publication of a series of anatomical Memoirs on various portions of the structure of the Crustacea, Annelida, &c., in conjunction with his friend Milne Edwards, which has been continued until his decease.

He became attached, in 1826, to the Jardin des Plantes, as assistant to Lamarck and Latreille; and on the death of the latter, in 1833, he was elected Professor of Entomology, in his stead. It was in this capacity that he annually delivered a series of lectures, in which, in later years, he especially illustrated the natural history of the insects most injurious to vegetable productions; and in prosecuting his researches upon these and other subjects, which he investigated with the most minute precision, he amassed together manuscript observations filling not fewer than fourteen thick quarto volumes, accompanied by a vast number of original drawings, and a collection of illustrations of the natural history of the insects he studied, their modes of attack upon plants, transformations, &c., arranged with the utmost care, every specimen being authenticated by references to his manuscripts.

The value of these collections and manuscripts cannot be appreciated except by those who have studied them. For myself, who have long enjoyed the friendship of this distinguished Entomologist, and by whom I was allowed uncontrolled liberty of examining these precious collections *, I hesitate not to say that were his manuscripts published, naturalists would not hesitate to place Audouin in the same rank as Réaumur: as it is, justice cannot be accorded to his merits, although the numerous Memoirs which he from time to time published sufficiently indicate the correctness of this statement, which might otherwise be deemed the remark of a person too favourably impressed with the talents of a now lost friend. These memoirs exhibit in the highest degree the spirit of observation, surprising sagacity, indefatigable patience, and a fixed determination to acquire a complete knowledge of the subjects of his investigation. The concise list which I have added, of these memoirs, at the end of this article, will sufficiently show the peculiar genius of M. Audouin.

By those who enjoyed a personal acquaintance with Audouin, will his loss be most severely felt. In their memories will long survive his deep-searching remarks and precision of observation. In our rambles together on the banks of the Rhine and Seine, his conversation struck me as resembling a mine of practical intelligence; and his tact in seizing upon the peculiarities of the objects which presented themselves to our notice was most extraordinary.

The non-publication of his manuscripts offers, in fact, a complete clue to Audouin's character; namely—a constant and too ardent desire to obtain fresh stores of knowledge, rather than a determination to occupy any of the present time in preparing for publication facts, the knowledge of which he had already acquired.

M. Milne Edwards excellently expresses this characteristic in the observation which he made in his discourse at the tomb of Audouin:—"Cette surexcitation de l'intelligence succédant à une surexcitation du cœur" (occasioned by circumstances unconnected with Entomology) "devait avoir des suites funestes." Most sad indeed has been the suite. Surrounded by an attached family† and a circle of devoted friends, and at a time when his researches were about to be given to the world, he died of apoplexy, induced by indisposition, contracted during a journey to the South of France, undertaken in his official capacity to investigate the natural history of the insects which infest the olive plantations,—a martyr to his favourite science.

Funeral orations were delivered at his tomb by M. Serres, President of the Academy of Sciences; M. Chevreul, Director of the Museum of Natural History; M. Edwards, Member of the Institute and President of the Philomatic Society; and by M. Blanchard, Assistant Entomologist at the Jardin des Plantes. I understand from M. Gervais that his collections have been transferred to the Jardin des Plantes, and that his library (exceedingly rich in detached entomological articles, and most liberally opened to the entomologists of Paris) will most probably be sold by auction.

The vacant professorship at the Jardin des Plantes has been conferred on M. Milne Edwards.

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* A number of statements derived from these manuscripts and collections add considerable interest to my Modern Classification of Insects, in which I have published notices of them.

† He married a daughter of the elder and sister of the younger Brongniart.

A CONCISE LIST OF THE CHIEF ENTOMOLOGICAL WORKS OF J. V. AUDOUIN

(EXCLUSIVE OF THOSE UPON THE ANNELIDA).

1818. Anatomy of the Larva of Conops (with Lachat). (In Mem. Soc. N. H. Paris, t. i., and Journ. de Phys. t. lxxxviii.)
1820. On the Natural Relations which exist between the masticating and locomotive organs of Crustacea, Hexapod Insects, and Arachnida. (Abstracted in Cuvier's Analysis of the Academy of Sciences, 1820.)
1820. On the Thorax of Articulated Animals, particularly Insects. (Partly published in Ann. Sci. Nat. t. i.)
1821. On Achlysia [now proved to be the immature state of Hydrachna]. (In Mem. Soc. d'H. N. tom. i.)
1821. On the Natural Relations between the Trilobites and Articulated Animals. (In Ann. Gen. Sc. Phys. t. viii.)
1821. On the Copulative Organs of male Bombi. (In ditto.)
1824. Letter on the Generation of Insects. (In Ann. Sc. Nat. tom. ii.)
1824. Anatomy of Drilus flavescens. (In ditto.)
1824. Note on a new species of Achlysia. (In ditto.)
1825. Description of the Plates of Annulosa in the great work upon Egypt.
1826. On Nicothoe, parasitic on the Lobster (with M. Edwards). (In Ann. Sc Nat. tom. ix.)
1826. On a small Isopodous parasite upon Callianassa. (In ditto.)
1826. Researches upon the natural history of the Cantharides (in ditto), augmented and subsequently published as his medical Thesis.
1827. Researches upon the Circulation of the Crustacea (with M. Edwards); two Memoirs. (In Ann. Sc. Nat. tom. xi.)
1827. Researches upon the Nervous System of Crustacea (with M. Edwards). (In ditto, tom. xiv.)
1828. On Respiration of Crustacea (with M. Edwards). (In ditto, tom. xv.)
1829. On Anatomy of Crustacea (with M. Edwards). (In ditto, tom. xxi.)
1830. Resumé d'Entomologie, 2 v., 32mo (with M. Edwards).
1830. Note on Nervous System of Crustacea (with M. Edwards). (Ann. Sc. Nat. tom.xx.)
1832. Description of Cicindela 4-maculata, in Guérin's Mag. Zool.
1832. Memoir on various Acaridæ (In Ann. Sc. Nat. t. xxv.)
1833. On the Nest of Mygale fodiens. (In Ann. Soc. Ent. Fr. 2.)
1833. On a Coleopterous Insect which passes a great portion of its life under water (Epus fulvescens). (In Nouv. Ann. du Mus. t. iii.)
1833. On the Metamorphoses of Dosithea and its parasitic Ichneumon. (In Ann. Soc. Ent. Fr. tom. iii.)
1833. On the Habits of Sitaris humeralis. (In ditto, tom. iv.)
1825. Description of Meloe collegialis. (Guérin, Mag. Zool.)
1835. Analysis of two Calculi found in the biliary canals of Insects. (In Ann. Sc. Nat. 2 Ser. t. v.)

1836. Researches upon Muscardine. (In Ann. Sc. Nat. 2 Ser. t. v.)
1837. New Experiments on Muscardine. (In ditto.)
1837. Observations on Cyzicus, n. g. Entomostracæ [Estheria, Rüpp]. (Ann. Soc. Ent. Fr. t. vi.)
1837. On the Nest of a Brazilian Mygale. (Ann. Sc. Nat., Apl. 1837.)
1837. On the Ravages of the Pyralis of the Vine. (Ditto, tom. viii.)
1837. On Scolytus, in Loudon's Arboretum, p. 1387, &c.
1839. Exposition of various Observations upon Insects injurious to Agriculture. (Ann. Sc. Nat 2 Ser. t. ix.)
1839. Entomological Instructions for a Traveller in Abyssinia. (Comptes rendus, t. ix. p. 570.)
1839. On the Habits of Odynerus. (In Ann. Sc. Nat. 2 Ser. tom. xi.)
1840. Observations on various Insects which attack Timber. (In Ann. Sc. Nat. 2 Ser. tom. xiv.)
1840. On a specimen of Bombyx Cecropia, reared at Paris. (In Comptes rendus, tom. ii. p. 96.)
1840. On the Phosphorescence of some Articulata. (In ditto, p. 757.)
1840. History of Insects injurious to the Vine, especially the Pyralis, 1 vol. 4to. Part 1. Part 2 is in the press, and the completion of the work "sera proptement achevé," according to M. M. Edwards.
1840. Description of new Cicindelidæ in the collection of the Jardin des Plantes (with M. Brullé). (Archives du Muséum, tom. i.)
1841. Description of new Crustacea in the same collection (Serolis, &c.), (with M. Edwards). (In ditto, tom. ii.)

M. Audouin also contributed a great number of verbal notices, especially relative to destructive insects, to the Entomological Society of France, of which abstracts are published in the Bulletin of Proceedings of that Society. He also published a great number of Entomological articles in the Encyclopédie Méthodique, the Dictionnaire Classique d'Histoire Naturelle; and his name appears also as a contributor to the Dictionnaire Universel d'Hist. Nat. He likewise wrote the article Arachnida in the 'Cyclopædia of Anatomy and Physiology', and edited the Annulose portion of the beautiful edition of the Règne Animal, now publishing by Crochard. He also contributed many notes on the structure of insects to M. Brullé, for those volumes of the Histoire Naturelle des Insectes which have appeared.

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PLATE XXV.

ON THE OPAQUE-WINGED SPECIES OF CICADA.

HAVING in the description of the preceding plate shortly noticed the generic distribution of the family Cicadidæ, I shall here confine myself to those species of Cicada which have the fore wings opaque and coloured, with the base more coriaceous. These species form the second section of the genus as proposed by Dr. Germar, in his Memoir in the second volume of Silbermann's "*Revue Entomologique.*" * Dr. Burmeister comprises them in his sub-section *b*, of his first division of the genus.

The beautiful species of this group hitherto described are the following: all being natives of Asia, or the islands of the Indian Archipelago.

SPECIES I.—*C. speciosa*, Illig. (Wied. Arch. 1, p. 145; pl. 2. Fabricius. Westw. in Donov. Ins. Ind. 2d Edit. Lap. and Blanch. Hist. nat. ans. art.)

SYN. *C. Indica*, Donov. Ins. Ind. 1st Edit.

SPECIES II.—*C. fasciata*, Fabr. Stoll. Cig. tab. 4, fig. 16.

SPECIES III.—*C. maculata*, Drury, vol. 2, App. pl. 37, fig. 1. Fabricius, &c.

SPECIES IV.—*C. thalassina*, Perchéron, Gen. d. Ins. Hémipt. pl. 2. Guér. Voy. Coq. p. 183.

NOTE.—The figure above referred to gives but a faint idea of the beauty of this species, which is in the collection of the Linnæan Society of London.

SPECIES V.—*C. pulchella*, Westw. in Royle's Himalaya, pl. 10, fig. 2. [Nigra, capite thoraceque sulphureo-maculatis; alarum dimidio basali sulphureo (in alis anticis fascia nigricanti obliqua in medio diviso) apicibus flavescentibus. Expans. alar. unc. $3\frac{3}{4}$. Himalaya.]

SPECIES VI.—*C. sanguinea*, De Geer. Stoll. Cig. fig. 62. Donov. Ins. China, pl. 16, fig. I. 1st Edit. Westw. in ditto, 2nd Edit. Guérin, Voy. de la Favorite, (Mag. Zool. Ins. pl. 237, fig. 1).

SYN. *C. philæmata*, Fabricius, Germar, Burm.

SPECIES VII.—*C. sanguinolenta*, Fabr, &c. (Fronte rufo, linea longitudinali nigra alisque posticis fuscis.)

SPECIES VIII.—*C. incarnata*, Germar. Guérin.

SYN. *Cig. sanguinol.* Brullé, Hist. Nat. Ins. t. x., pl. 5, fig. 2.

SPECIES IX.—*C. Germarii*, Guér. Mén. Voy. Favorite (Mag. Zool. Ins. pl. 237, fig. 2).

SPECIES X.—*C. phœnicura*, Germar, in Silb. Rev. Ent. 2, p. 76. Guér. l. c.

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* Dr. Germar had previously published an excellent Monograph of the genus, with descriptions of 106 species, in Thon's Entomologisches Archiv. vol. 2. M. Guérin Méneville has also described numerous species in the text of the Voyage de la Coquille, and Voyage de Belanger.

Species XI.—*C. testacea*, Fabr. Stoll. Cig. pl. 8, fig. 31, Guér. l. c.

Species XII.—*C. trabeata*, Germar, in Thon's Arch. 2, fasc 2. Guér. l. c.

Species XIII.—*C. splendidula*, Fabr., Germ., Guér., Donovan. Ins. China, pl. 16, fig. 4, (ex individuo Druriano delineata).

Species XIV.—*C. crocea*, Guér. Voy. Favorite (Mag. Zool. Ins. pl. 237, fig. 3, and Voy. Coq. p. 182).

I am enabled to figure, in addition to the above, the two beautiful nondescript species represented in the accompanying plate.

Species XV.—*C. Mearesiana*, W. (Pl. 25, fig. 1.) Nigra, pronoti margine postico flavo; mesothorace postice utrinque puncto oblongo ferrugineo; metathorace fulvo marginato; alis anticis nigro-fuscis venis nigris; posticis læte testaceis; area anali margineque tenui apicali fuscis, venis nigris. Long. corp. unc. 1⅔. Expans. alar. unc. 5½.

A unique specimen of this fine species (which should be placed between C. speciosa and fasciata) is in the collection of F. Parry, Esq. It is a native of the Himalayns, whence it was sent by —— Meares, Esq., with whose name it is inscribed.

Species XVI.—*C. dives*, W. (Pl. 25, fig. 2.) Nigra, alis anticis nigris venis rubris, fascia media transversa albida, posticis testaceis, dimidio apicali nigro. Long. corp. lin. 12. Expans. alar. unc. 3.

A unique specimen of this beautiful insect was sent from Sylhet, by the brother of the Rev. Mr. Stainforth, who allowed me to figure it for this work. It is now in the collection of the Rev. F. W. Hope.

A translation of Anacreon's ode to the Cicada, will form a pleasant supplement to the preceding technicalities.

Happy creature! what below
Can more happy live than thou?
Seated on thy leafy throne,
(Summer weaves thy verdant crown,)
Sipping o'er the pearly lawn
The fragrant nectar of the dawn;
Mirthful tales thou lov'st to sing,
"Every inch" an insect king:
Thine the treasures of the field,
All thy own the seasons yield;
Nature plants for thee the year,
Songster to the shepherds dear:
Innocent, of placid fame,
Who of men can boast the same?

Thine the lavished voice of praise,
Harbinger of fruitful days;
Darling of the tuneful nine,
Phœbus is thy sire divine;
Phœbus to thy notes has given
Music from the spheres of heaven:
Happy most, as first of earth;
All thy hours are peace and mirth;
Cares nor pains to thee belong,
Thou alone art ever young;
Thine the pure immortal vein,
Blood nor flesh thy life sustain;
Rich in spirits—health thy feast;
Thou'rt a demigod at least.

The beautiful plant represented in the plate is the Dendrobium Pierardi (Lindl. Bot. Reg. t. 21, pl. 175), of Roxburgh, a native of Chittagong, and various parts of the Delta of the Ganges, which has flowered beautifully in the Botanic Gardens at Kew this spring; the flowers being, however, paler-coloured than represented in the figure.

1a
1b
1c
1d
1
2a
2
2b
3a
3
3b
3c
3d
3e
3f

PLATE XXVI.

MONOGRAPH OF THE GENUS MASTAX, BELONGING TO THE FAMILY OF THE TRUE LOCUSTS.

The insects of the genus Mastax, of Perty, illustrate a peculiarity in Entomo-geography, which does not appear to me to have been sufficiently noticed, namely, the occurrence of species belonging to aberrant and anomalous genera, in very distant localities, often indeed in different quarters, of the globe. The Mole-crickets offer a striking instance of this peculiarity. The genus is very anomalous in many of its characters, yet we find species in each of the five continents (including New Holland). The two species of Mastax hitherto described (from unique individuals), are natives of the New World, whilst the three additional ones represented in the accompanying plate, are natives of the Islands of the Indian Archipelago.

The genus (in addition to the great rarity of the species) is especially interesting on account of various structural peculiarities. The fore wings are in some species quite hyaline and almost colourless, which gives the insects an appearance quite unlike the rest of the family. The head is very much elevated above the level of the prothorax. The antennæ are composed of very few joints; the three ocelli are placed between the eyes; the palpi are very short; the three sternums are simple, the hind-legs long, the tarsi 3-jointed, with a moderate sized pulvillus between the ungues. The anal appendages in M. mutilata are described by Serville as "courts et droits," but in the males of M. apicalis and M. guttata they are dilated and contorted in a singular manner quite unlike any of the rest of the family.

As to the natural relations of the genus, Burmeister (who however had not seen it in nature) places it between Gomphocerus and Ommoxecha, whilst Serville (who had two species before him) introduces it (with several other curious genera) between Gomphocerus and Tetrix. It appears to me, however, much more closely allied to Proscopia of Klug, with which it agrees in the elevated head and short few-jointed antennæ.

Species I.—*Mastax virescens*, Perty (Del. An. Art. Bras. t. 24, f. 3. Serville H. n. Ins. Orth. p. 751. Burm. Handb. d. Ent. 2, p. 653). Virescens, seu fuscus, facie et pedibus testaceis, elytris et alis diaphanis. Long. fere 10 lin. (teste Serv.). Brazil.

Species II.—*Mastax mutilata*, Serv. Ins. Orth. p. 751. Lævis glaber, brunneus, facie antice ochracea, prothoracis lateribus fulvis, tegminibus fere, alisque omnino, obsoletis, abdominis segmentis 6 et 7 fulvis, ♂. Long. 1in. 5 (teste Serv.). Colombia.

Species III.—*Mastax apicalis*, Westw. (Plate 26, fig. 1). Luteus, capite supra, thoracis et abdominis dorso nigricantibus, hoc fascia pone medium apiceque extremo luteis, pedibus luteis nigro-maculatis, tegminibus et alis hyalinis ad apicem tenuiter fusco coloratis ♂.

(Plate 26, fig. 1 *a*, head seen in front; 1 *b*, extremity of abdomen seen from the side; 1 *c*, the same seen from below; 1 *d*, natural length.)

Long. corp. unc. $\frac{3}{4}$. Expans. tegmin. unc. $1\frac{3}{4}$. Sumatra; Sir S. Raffles. Mus. Zool. Soc. London.

Species IV.—*Mastax vitrea*, Westw. (Plate 26, fig. 2). Fuscus, facie fulvescente, abdomine in medio pallidiori, pedibus fuscis, femoribus posticis pallidius fasciatis; tegminibus et alis hyalinis parum infumatis. ♀

Plate 26, fig. 2 *a*, apex of abdomen seen sideways; 2 *b*, natural length.

Long. corp. unc. 1. Expans. tegmin. unc. $1\frac{3}{4}$. Java, Mus. Hope.

Species V.—*Mastax guttata*, Westw. (Plate 26, fig. 3.) Nigricans, subtus paullo pallidior facie genisque luteis, vertice angulato, abdomine ♂ ad apicem valde inflato; femoribus posticis fulvo oblique bifasciatis, tegminibus fuscis nitidis, guttis duabus versus apicem hyalinis, postica majori et ad marginem posticum extensa; alis hyalinis margine postico fusco. ♂

Plate 26, fig. 3 *a*, natural size; 3 *b*, antenna; 3 *c*, head and prothorax seen sideways; 3 *d*, head seen in front; 3 *e*, apex of abdomen seen from beneath; 3 *f*, ditto seen laterally.

Long. corp. lin. 7. Expans. tegm. lin. $14\frac{1}{2}$. Sumatra, Sir S. Raffles, Mus. Zool. Soc. Lond.; and Philippine Islands, H. Cuming, Esq. Mus. Brit.

The curious plant figured is the Stapelia adscendens of Roxburgh: Plants of Coromandel, vol. i. pl. 30.

10W 9.8.42

PLATE XXVII.

DESCRIPTION OF A NEW INDIAN SPECIES OF PAPILIO.

The Papilio Paris of Linnæus may be considered as the type of a small group of Asiatic species of Papilio, distinguished by having the upper surface of the wings thickly irrorated with golden green atoms, the hind wings being marked by a large patch of shining blue or green near the outer angle. The species of this little section form portion of Boisduval's "Groupe IV." which also includes P. Ulysses, P. Peranthus, and P. Palinurus and its allies. P. Paris, Arjuna, and Polyctor, belong to the little group first mentioned, as well as several other species of equal rank which I have seen in the collections of the East India House, British Museum, &c. These species appear to be respectively confined to distinct districts, and in the opinion of some authors may be deemed geographical sub-species—a name involving considerations of great difficulty.

The species represented in the accompanying plate is certainly the most splendid of all these butterflies. It is indeed absolutely impossible to give a correct idea, by colouring, of the beauty of its hues, and especially of the varying lustre of the blue patch on the hind wings; some of the blood-red lunules have a beautiful purplish tinge, produced by blue atoms scattered over them, whilst others are powdered with the golden-green spangles; in fact, the only correct idea of the species can be obtained by calling to mind the showers of coloured fire on a Vauxhall night.

PAPILIO ARCTURUS, W., Pl. 27.

P. alis nigris, viridi-atomosis; posticis obtuse dentatis et late caudatis; anticis striga interrupta maculârum ex atomis viridibus formatâ, ex angulo postico ad partem dimidiam alarum ductâ et cum margine subparallelâ; posticis supra, plaga magnitudine mediocri, versus angulum externum lato cæruleâ strigaque ejusdem coloris ex ejus apicem ad marginem alarum extensâ, lunulis tribus sanguineis, maculaque ocellari (medio nigro) et linea transversa sanguineis ad angulum analem, illa cum striga curvata viridi-atomosa coronata; alis subtus nigricantibus basi albido atomosis, anticis striga lata subapicali cinerea, venis lineisque intermediis nigris; posticis lunulis 5 rubro-fulvis (cæruleo pulverosis) maculisque duabus magnis rubro-fulvis (medio nigris et lunula supera cærulea ornatis) ad angulum analem.

Expans. alar. antic. unc. 5.

Inhabits the Himalayan mountains, Sylhet, and the adjacent parts of India.

Mus. Parry, Hope, Brit. &c.

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The plant represented in the plate is Vanda teres (Lindl. Bot. Reg. vol. 21, pl. 1809), one of the most beautiful Orchidaceous plants hitherto found in India, having been originally discovered in Sylhet by Dr. Wallich, and subsequently found in the Burmese Empire, by Mr. W. Griffith.

PAPILIO.

Ah sim Papilio natus in flosculo,
Rosæ ubi liliaque et violæ patent;
Floribus advolans, avolans, osculo
Gemmulas tangens, quæ suavè olent!
Regna et opes ego neutiquam postulo,
Nolo ego ad pedes qui se volutent—
Ah sim Papilio natus in flosculo,
Osculans gemmas quæ suavè olent!

Magicam si possem virgam furari,
Alas has pulchras aptem mî, eheu!
Æstivis actis diebus in aëre,
Rosâ cubant Philomelæ cantu.
Opes quid afferunt? Curas, somnum rarè;
Regna nil præter ærumnas, eheu!
Ah sim Papilio, die volans aëre,
Rosâ cubans Philomelæ cantu.

Quemque horum vagulum dicis horrore
Frigora Autumni ferire suo;
Æstas quando abiit, mallem ego mori,
Omni quod dulce est cadente pulchro.
Brumæ qui cupiunt captent labore
Gaudia, et moras breves trahunto—
Ah sim Papilio; vivam in errore
Concidamque omni cadente pulchro.

The preceding singular and beautiful specimen of rhyming Latin verse, from the pen of a highly distinguished scholar and dignitary of the Church of England (understood to be Archdeacon Wrangham), appeared in the Athenæum of July 16th, 1828, at the time when the pretty song "I'd be a Butterfly" was so much in fashion.

28.3.42.

PLATE XXVIII.

DESCRIPTIONS OF SOME NEW SPECIES OF CETONIIDÆ, FROM AUSTRALIA, ASIA, AND THE ASIATIC ISLANDS.

GENUS SCHIZORHINA, *Kirby* (Linn. Trans. vol. 14, p. 570).

This genus is arranged by Mr. MacLeay as the head of the group which he names Cetoninus, and is regarded as approximating to Lomaptera, especially by means of Sch. Brownii, K, which presents vestiges of the lobate thorax of that genus. The following are Mr. MacLeay's divisions of the genus.

A. Elytra broader at the base.

1. *Brunoniæ*, M'L. Mesosternum produced, narrow, flat; elytra spinose at the apex. Type, *S. Brownii*, K.
2. *Phillipsiæ*, M'L. Mesosternum broad, flat, lanciform; elytra with subsinuated sides and spinose at apex. Type *S. Phillipsii*, Schreibers.

B. Elytra not broader at the base.

3. *Integræ*, M'L. Mesosternum short, flat; clypeus rather entire; elytra with sinuated sides, and no spines at apex. Type, *S. frontalis*, Don.
4. *Gymnopleuræ*, M'L. Mesosternum produced, flat; clypeus emarginate; elytra with sinuated sides, and no spines at the apex. Type, *S. punctata*, Don.
5. *Insulares*, M'L. Mesosternum produced, narrow, cylindrical; clypeus emarginate; elytra spinous at apex, and with parallel sides. Type, *S. cyanea*, Oliv.

The last section receives its name Insulares, because the species "are in general natives of Madagascar, or of the islands adjacent to New Holland." The typical species is, however, a native of tropical Western Africa*. The species of which this last section is composed in their peculiar colours, and various other particulars, "show us how we may pass to" the genus Coryphe, M'L.; Gnathocera, G. and P.

Schizorhina obliquata, W. (Plate 28, fig. 1.)—Supra late aurantia, pronoto maculis duabus lateralibus alterisque duabus, magnis obliquis irregularibus, in medio connexis, nigris; elytris sutura, humeris, maculis duabus parvis ad basin suturæ, fascia obliqua pone medium singuli maculaque sub-apicali nigris vel picco-nigris, podice flavo, medio castaneo, punctis 4 nigris; corpore subtus antennis pedibusque rufo-brunneis, mesosterno abdomineque in medio flavo.

Obs. Mesosternum (fig. 1 *a*, 1 *b*,) vix. porrectum, fere rotundatum ♀. Long. corp. lin. 7. Inhabits New Holland. In the collection of the Rev. F. W. Hope.

Note. This species is most nearly related to Sch. punctata, but differs from it in the form of the prothorax, of which the hinder angles are rounded off, the more exposed epimera, the less sinuated elytra, differently-formed mesosternum, &c.

Schizorhina Bestii, Parry, MSS. (Plate 28, fig. 2.)—Nigra, capite punctis 3 minutis fulvis, medio bilobo, prothorace marginibus lateralibus et antico flavis, maculis duabus nigris, elytris viridanis sutura margineque tenui, macula triangulari humerali, macula quadrata discoidali, fasciaque lata subapicali nigris; pygidio nigro maculis duabus flavis, abdomine infra guttis fulvis mediis duplici serie ordinatis punctisque lateralibus flavis. ♀.

Obs. Mesosternum paullo porrectum latum (fig. 2 *b*, 2 *a*,) fig. 2 *a*, maxilla.

Long. corp. lin. 12. Inhabits Norfolk Island. Captain Best, Mus. D. Parry. Allied to Sch. frontalis.

* See p. 71, note †, as to the true locality of the species.

Genus MACRONOTA, *Wiedemann.*

This genus is at once distinguished by the posteriorly lobed prothorax, which does not however conceal the scutellum, which is the case both in Lomaptera and Gymnetis. The suture of the elytra and the centre of the prothorax are also generally deeply impressed, and the clypeus is commonly deeply emarginate. There is considerable diversity in the different species still retained in the genus; thus the males in M. smaragdina have curved anterior tibiæ externally destitute of teeth, and in this species the mesosternum is very much porrected and curved upwards at the tip. In M. 3-sulcata, De. H., closely allied to M. Diardi, the mesosternum is very thick and not much porrected. M. ægregia has the mesosternum still less porrected, and the fore tibiæ of the males straight and externally 3-dentate. M. calcarata, Klug, (G. Doryscelis, Dej.) has also the fore tibiæ in both sexes 3-dentate.

Macronota Mearesii, Parry, MSS. (Plate 28, fig. 3.)—Nigro-ænea, nitida, elytris nigris, capite parum emarginato, vertice utrinque macula sericea, prothorace in medio valde sulcato, lateribus plagaque magna mediana punctata scutelloque sericeis; elytris maculis 10, (duabus in medio elytrorum versus suturam majoribus et striatis) sericeis, sericie albido-virescenti, corpore subtus maculis lateralibus albido-virescentibus, antennarum capitulo fusco, podice fulvo-hirto. ♀

Obs. Mesosternum parum porrectum latissimum (figs. 3 *a*, 3 *b*). Long. corp. lin. 9½.

Received by F. Parry, Esq. in a collection formed by —— Meares, Esq., near Darjeeling, an invalid station in the Himalayan mountains, near the Nepaul frontier, about 50 miles from Dhawalagiri, the highest mountain in the world. It is very closely allied to the Macronata dives, G. and P. Mon. Cet. p. 314, pl. 61, fig. 6, which is from the coast of Malabar and which seems to be identical with the Coilodera penicillata, Hope's Synops. Nep. Col. (Zool. Misc. p. 25.)

Macronota Rafflesiana, W. (Plate 28, fig. 4.)—Nigra opaca, capite parum emarginato, prothorace elytris multo angustiori subhexagono haud sulcato, linea tenui albida cum margine antico et lateribus parallela angulos posticos haud attingente; elytris basi latis postice attenuatis, ad suturam vix sulcatis; nigris basi maculaque media in cingulo rufis, linea tenui albida ad marginem scutelli, duabus transversis mediis alterisque duabus subapicalibus punctisque nonnullis (magnitudine variis) lateralibus albidis; segmentis abdominis (supra visis) albido marginatis, corpore subtus albido nigroque vario. ♀

Long. corp. lin. 8½.; lat. humer. lin. 4½. Inhabits Sumatra; Sir S. Raffles. In Mus. Soc. Zool. London. Nearly allied to M. Malabariensis, Gory and Perch, Mon. Cet. p. 320, pl. 63, fig. ♂ which is described as a native of Ceylon.

Macronota tristis, Horsfield, MSS. (Plate 28, fig. 5.)—Nigro-virescens nitidissima, clypeo parum emarginato, antice sulcato punctato, palpis longis, (5 *a*, maxilla) prothorace angusto, lateribus deflexis et punctatis, margine antico in medio valde elevato, dorso vix sulcato; elytris ad basin prothorace fere duplo latioribus, sutura valde sulcata humeris elevatis, lateribus rugose punctulatis, singulo in medio spatio circulari parum impresso oblique striolato, podice striolato, pedibus longioribus, coxis posticis valde prominentibus; corpore subtus concolore lateribus striato-punctulatis; mesosterno brevi rotundato; (figs. 5 *b*, 5 *c*;) unguibus onychiis distinctis (fig. 5, *d*).

Long. corp. fere lin. 15. ♀. Inhabits Java. In the collection of the East India House, formed by Dr. Horsfield, to whom I am indebted for an opportunity of describing this fine and singular species.

Macronota vittigera, Hope (Proc. Ent. Soc. July 1841). (Plate 28, fig. 6.)—Nigra nitida, clypeo valde emarginato, linea aurantia media e margine antico per prothoracem et scutellum ducta, prothorace vix sulcato, postice fere elytrorum latitudine, aurantio marginato; elytris versus suturam profunde impressis nigris lineato-punctatis, singulo vitta aurantia parum curvata, e basi fere ad apicem extensa, corpore subtus nigro nitido lateribus aurantio maculatis, podice maculis duabus magnis aurantiis; pedibus brevibus, dentibus tibiarum anticarum brevibus, mesosterno longo porrecto apice acuto (figs. 6 *d*, 6 *e*,—6 *a* mandible, 6 *b* maxilla, 6 *c* mentum).

Long. corp. lin. 13½. ♀. Inhabits the Mysore district of India. In the collection of the Rev. F. W. Hope.

This species makes a very near approach to the genus Lomaptera in several respects, especially the deeply emarginate clypeus, porrected mesosternum, &c.

ENTOMOLOGICAL INTELLIGENCE, &c.

(No. VII.)

HARMONIES OF NATURE EXISTING BETWEEN PLANTS AND INSECTS.—In reference to the circumstances stated in a preceding number, from which it has been inferred that silk is a modification of caoutchouc, it is mentioned in the "Botanist" (vol. ii. No. 69) that "a species of Scorzonera, which belongs to the natural order of plants Cichoraceæ, has been found a good substitute for the mulberry leaf in France. We have also been informed that a caterpillar which forms a very large cocoon and spins a tough but coarse kind of silk, feeds on the leaves of the South American caoutchouc tree, Siphonia elastica. Led away by the apparent simplicity of an artificial arrangement of plants, botanists neglected the strong proofs furnished by the instinctive propensities of the whole animal kingdom, that plants which agree in structure generally possess similar propensities. It was long known that certain animals fed on particular plants, and both during the last century and the present this fact has been adduced as an evidence of the paternal care of the Creator in providing food for all his creatures, so that each should have its allotted portion; but it is available also to show the correctness of botanical analogies. In this way has Decandolle applied it in his "Essai sur les propriétés medicales des plantes," from which a few examples may be quoted. The Cynips Rosæ and Cynips Salicis, the Cionus Scrophulariæ and Hypera Rumicis, feed upon *several*, sometimes *all* the species of the genera of plants, from which they derive their specific names; but upon no species belonging to any other tribe of plants; and indeed the fact of the Cionus Scrophulariæ feeding on species of Verbascum may be allowed to decide the point of the genus Verbascum belonging to the Scrophulariaceæ, and not to the Solanaceæ, as some think it does. The Meloe vesicatoria (Spanish blistering-fly) gives the preference to the ash, then to the lilac, or privet, and last to the olive, all members of the tribe Oleaceæ. The insect is never found on any plant of the Jasminaceæ, though it is not uncommon on willows, from which it is remarkable that manna may be obtained, as well as from the Ornus Europæa, or flowering ash. The Pontia Brassicæ, or cabbage butterfly, feeds only on cruciferous plants, with the solitary exception of the Tropæolum majus, or Indian

cress, the similarity existing between which and some cruciferous plants has procured for it the name of the Nasturtium; while the Tinea flavella of Reaumur, the natural food of which is the Astragalus glycyphyllus, in the absence of that, whatever variety may be presented to it, will feed only on some other leguminous plant."

Shortly previous to the publication of these observations I had made some remarks in Mr. Loudon's Arboretum Britannicum, under the genus Quercus (p. 1815) nearly to the same effect. In making out the lists of the species of insects which attack our chief forest trees, I had noticed that although many are exclusively confined either to the oak, beech, birch, or hazel, yet many species feed indiscriminately upon any of these trees; some species of a genus would also be found to inhabit one of these kind of trees, and other species one or more of the other kinds; "thus clearly proving not only the very natural character of the order Amentaceæ, but also the equally natural distribution of the insects themselves into genera consisting of species, all of which are either generally amentaceous in their food, or are confined to the oak or the birch alone." I am happy to find these observations confirmed and explained, believing as I do that the views here suggested are capable of a far wider extension than has yet been given to them.

Insects observed at sea (see *ante*, p. 64).—"On another occasion, when seventeen miles off Cape Corrientes, I had a net overboard to catch pelagic animals. Upon drawing it up, to my surprise, I found a considerable number of beetles in it, and although in the open sea, they did not appear much injured by the salt water. I lost some of the specimens, but those which I preserved belonged to the genera Colymbetes, Hydroporus, Hydrobius (two species), Notaphus, Synuchus, Adimonia, and Scarabæus. At first, I thought that these insects had been blown from the shore; but on reflecting that out of the eight species, four were aquatic, and two others partly so in their habits, it appeared to me most probable that they were floated into the sea by a small stream which drains a lake near Cape Corrientes. On any supposition, it is an interesting circumstance to find insects, quite alive, swimming in the open ocean, seventeen miles from the nearest point of land. There are several accounts of insects having been blown off the Patagonian shore. Captain Cook observed it, as did more lately Captain King, in the Adventure. The cause probably is due to the want of shelter, both of trees and hills, so that an insect on the wing, with an off-shore

breeze, would be very apt to be blown out to sea. The most remarkable instance I ever knew of an insect being caught far from the land, was that of a large grasshopper (Acrydium), which flew on board, when the Beagle was to windward of the Cape de Verd Islands, and when the nearest point of land, not directly opposed to the trade wind, was Cape Blanco, on the west of Africa, 370 miles distant.* "—(Darwin's Journal, pp. 185, 186.)

Papilio Pelaus (Plate 16, fig. 1, 2).—Figures of this species, doubtless derived from Drury's specimen described by Fabricius, are contained in Jones's Series of Drawings (vol. 1, pl. 32), so often referred to by that author. They agree with my figures except that the upper surface of the wings is darker (blacker) in Jones's drawings—the evident result of his figure having been made from a recent specimen and mine from an old one. The minute anterior whitish, transverse striga near the extremity of the abdomen in the anal area of the hind wings, is also not represented in Jones's drawing. It is not improbable that Mr. Doubleday's specimen, from which my figures were drawn, may be the original insect described by Fabricius, from Drury's specimen, which was, I believe, purchased at the sale of his collection by the late Mr. Haworth.

Cetonia Iris, Fabricius, Ent. Syst. 2, 144. Oliv. 1, 6, tab. 8, f. 77.—Deceived by the locality of Surinam given by Fabricius to this species (the typical specimen of which is still contained in the Banksian Collection at the Linnean Society), and knowing that no Gnathoceræ of Gory and Perchéron (Coryphe, MacL.), nor indeed any insect closely allied thereto, inhabit the New World, I did not think of comparing the Gnathocera amabilis, Bainb. (Tmesorrhina a. Westw. *ante*, p. 71), with the Banksian insect. My friend Burmeister having however suggested to me, by letter, the possibility that the two supposed species were identical, I have compared them together, and find that Mr. Hope's specimen differs only from the Banksian one in such characters as are sexual, the latter being a female with tridentate anterior tibiæ. The name Iris, Fab., must, therefore, be substituted for that of amabilis, Bainbr. Dr. Schaum has united Iris with Schizorhina cyanea, G. and P.; Sch. Swartzii,

* The flies which frequently accompany a ship for some days on its passage from harbour to harbour, wandering from the vessel, are soon lost, and all disappear.

Schaum (C. punctata, Schonh nec Donov.), and Sch. Thoreyi Schaum (n. sp.), into a small group distinguished by their tropical African habitat, and the elongated form of their bodies; the tibiæ of the males being bidentate, and those of the females tridentate. There is, however, considerable difference between the form of the clypeus, mesosternum, and fore tibiæ of the males of Iris and cyanea; the apex of the suture of the elytra in the latter species is also bispinose, whilst it is rounded off in the former.

TMESORRHINA SIMILLIMA (pl. 19, fig. 4, p. 72).—In addition to the structural differences noticed in the description and figure above referred to, it should be added that the mesosternum instead of terminating in a short rounded process (as in Tm. Iris and concolor, pl. 19, fig. 3 *e*), is long, acute, and slightly bent upwards at the tip. It must be left for a more detailed revision of the entire group to determine whether this character (which has just been stated to differ also in Sch. cyanea) will render it necessary to remove Tm. simillima from the other two species.

ANALECTA ENTOMOLOGICA, Dissertatio inauguralis, auctore Dr. Herm. Rud. Schaum, cum tab. ænea. Halis, Sax. 1841, pp. 49.

IN a former page I have dwelt upon and lamented the wide distinction which exists between our own and Continental nations in regard to the patronage offered by their respective governments to works of natural history. The little work at the head of this article offers another equally striking proof of the advantages enjoyed by Continental naturalists far exceeding those which English students possess. Natural history being one of the branches of education taught in all the German bürgher schools, gymnasiums, and universities—there being a professor of zoology in each of the latter—it follows that whenever a student manifests a decided predilection for any particular branch of the subject, his professor encourages him in it, and under his good directions the tyro launches forth his "dissertatio inauguralis,"—in a style as far superior to the feeble efforts of English debutants as can well be conceived. The inaugural dissertation of Goldfuss on the Coleoptera of the Cape of Good Hope, that of Burmeister "De insectorum systemate naturali," that by Erichson on the Dyticidæ, that of Schmidt on the Pselaphidæ, that of Runde on the Brachelytra, and Dr. Schaum's dissertation, amply confirm the truth of these remarks; all of them being works of talent, which will cause them to be always cited, and which, it is needless to suggest, have

evidently been prepared under the presiding direction of the professor of the university where these authors studied.

The little work which has given rise to these observations consists of four excellent treatises. The first is a monograph of the genus Scydmænus, in which we find due justice done to the writings of Kunze, Stephens, Erichson, Sturm, &c., and numerous new species added—forty-six species are described, including a number from North America, West India, East India, Madagascar, Brazil, Columbia, and also including two species of the little group which Waterhouse has named Eutheia.

The second paper contains some observations on the characters of the Cremastochilides—amongst which we find it stated that the mesosternum is never porrected in this group, but that when there is a sternal process it consists of the porrected metasternum.

The third treatise contains a great number of critical remarks on the nomenclature of the Cetoniidæ.

The fourth comprises descriptions of ten new species of Cetoniidæ —namely, Dicranorhina [Eudicella, White] Nireus, from Guinea; Gnathocera trivittata, from Caffraria; Schizorhina Thoreyi, from Guinea; Cetonia spectabilis, from Java; Cetonia Stähelini, from Abyssinia; Cetonia iridescens, from Guatemala; Cetonia vulnerata, from Java; Cetonia thoracica, from Arabia; Ischnostoma Raeuperi, from Caffraria; and Gymnetis atropurpurea, from Brazil.

SPECIES ET ICONOGRAPHIE GÉNÉRIQUE DES ANIMAUX ARTICULÉS. Par M. F. E. Guérin Méneville.

By a letter recently received from M. Guérin Méneville, I learn that the commencement of this useful work has been delayed in consequence of the great exertions which have been required for the completion of the text of the "Iconographie du Règne Animal," and the "Traité élémentaire d'Histoire Naturelle." It is now many months since M. Guérin kindly sent me a considerable portion of the text of the Insect portion of the Iconographie, and if the whole is executed on the same plan as the sheets before me, the text will be as full of new matter as the plates of that excellent work.

The genera intended to be described in the early numbers of the "Species et Iconographie Générique," are Rhipicera, Cebrio, Sandalus, Atopa, Cladon, Ptilodactyla, Epicyrtus, Eurypalpus [not in Dejean's catalogue], Cyphon, Eubria, Scyrtes, Nycteus, Atela Phengodes, Amydetes, Rabdota, Nyctocharis, Dadophora, Selas,

Auge, Actenista, Nematophora, Lychnuris, and Spenthera. The genera Lycus, Lygistopterus, Charactus, Dyctiopterus, Eurycerus, and Omalisus, will be described by the Marquis de Brême.

Sale of M. Audouin's library.—I have just received the catalogue of the library of M. V. Audouin, which will be sold by auction, at Paris, on 10th to the 25th of May. The catalogue itself forms a volume of 176 pages, and forms a most valuable addition to entomological bibliography. The works are arranged systematically instead of alphabetically, and certainly constitute a far more complete entomological library than has ever before been offered for sale. This may be easily conceived when it is mentioned that there are not fewer than seventy-four separate treatises on the honey-bee, and more than one hundred and fifty on the silkworm and silk culture. In addition to the works strictly on entomology and general comparative anatomy and physiology, there are numerous works on the other classes of animals. Copies of the catalogue may be seen at the Linnæan, Zoological, and Entomological Societies.

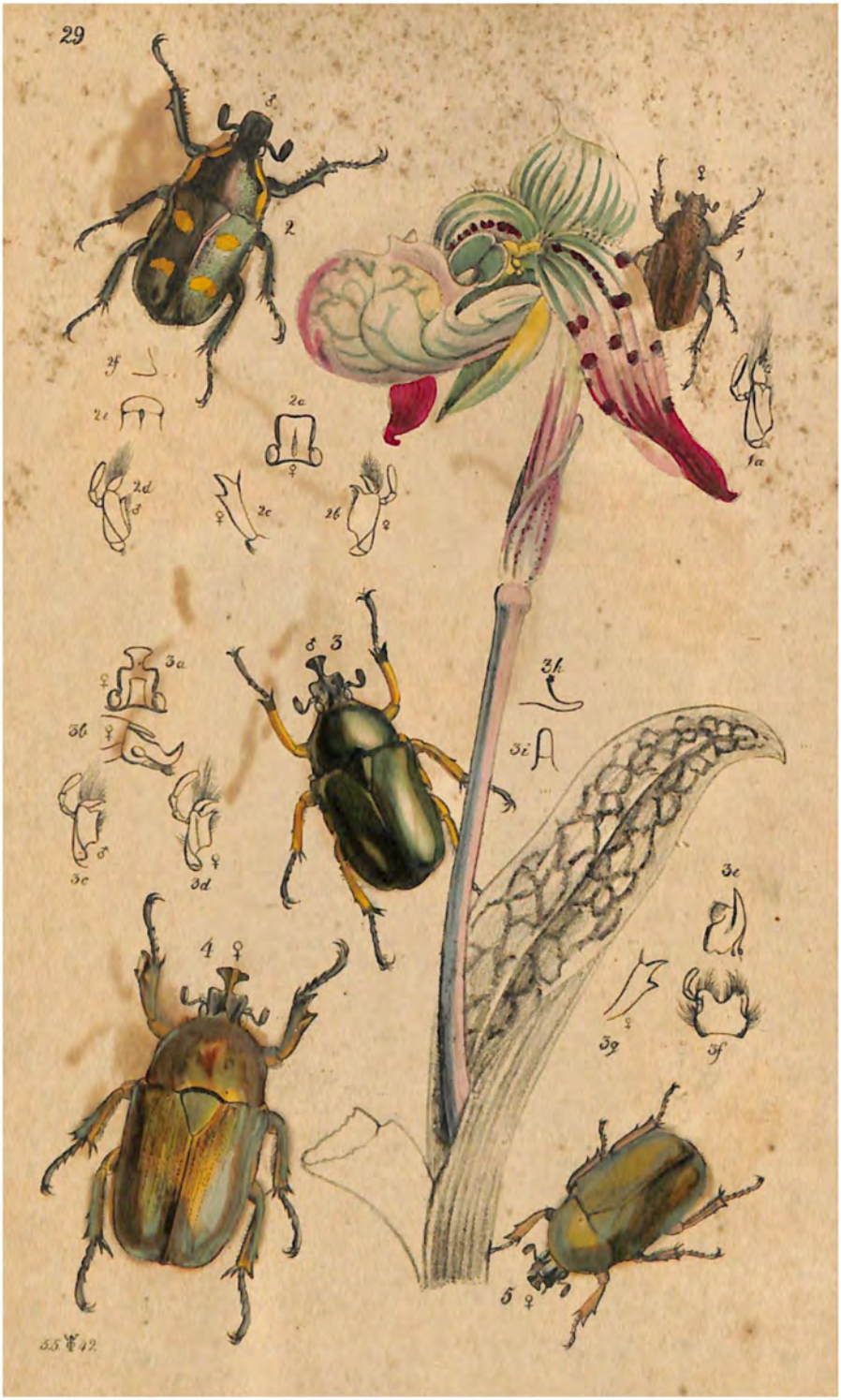
Insects of Central India.—I have been favoured by Lieutenant Colonel Hearsey, a gentleman who for more than thirty years has been stationed in the very centre of India (Saugor), with a sight of his very extensive and valuable collection of insects formed in that part of our Eastern territories. The collection is especially rich in Sphingidæ and nocturnal Lepidoptera—vast numbers of which were reared from the caterpillar state. The species of the modern genus Papilio are but few in number and well known. P. Hector (extremely rare), Pammon, Polytes: respecting the specific identity of the two last-mentioned insects, Colonel H. partially confirms the statement of Boisduval, having observed one chasing the other *con amore*. I was surprised not to find a single species of Lucanus, nor Fulgora, in the collection; which, however, includes a new species of Paussus, and of Diopsis, a very minute species of Apotomus, specimens of both sexes of the interesting Hymenopterous genus Trirogma, a number of very English-looking Harpalidæ, various Bolboceri and Athyrei, as well as most of the species described and figured by Mr. Saunders, in the Transactions of the Entomological Society (vol. iii. part 1, plate 5); Colonel Hearsey having communicated them to Mr. Prinsep, from whom Mr. Saunders received them.

HYPOCEPHALUS ARMATUS (Plate 10).—In my observations on this curious genus (p. 39), it was mentioned that M. Guérin Méneville entertained the same opinion as Professor Burmeister relative to the natural relations of this anomalous genus. The views of M. Guérin have appeared in the "Revue Zoologique," 1841, p. 217; and it is curious to perceive that many of the points of relation suggested by him are identical with those noticed in my article on the genus; he likewise mentions a new genus, Anoploderma, from the Andes of Peru, (described by him in the Rev. Zool. 1840, p. 276,) which, like Hypocephalus, possesses short and robust tibiæ, dilated at the tips and armed with spines and teeth, and adds, that the person from whom M. Marc received his specimens of Hypocephalus found two individuals in the earth, or decayed wood, at the foot of a deep slit in the trunk of a tree.

Since the publication of my memoir on this genus, I have received communications from several entomologists, some of whom, whose opinions will be read with respect, differ from the views above detailed: thus the Marquis Maximilian Spinola, in a letter dated Genoa, 11th February, 1842, writes to me, "Your drawing of the Hypocephalus has changed my previous opinions on that anomalous genus. I cannot, however, resolve on admitting it among the Prioniti; and I have stated my doubts on the subject in my memoir on the Prioniti, which I have transmitted to the Academy of Sciences of Turin, and which will be inserted in the third volume of the Transactions of that Academy. I think all the inconvenience arises from laying it down as a necessity that every insect must be placed in a determinate family; but if the family has no circumscribed characters, we should call it a 'Familioides,' and not a Family, and if it has any, the insect deprived of those characters, must stay at the door, but *out of* the family. If no other door is opened, it will remain without a family—and no matter for that, since Nature would have it so. Let it remain alone, until Nature, and not the love of system, grant it good company." Mr. Newman also, in a letter to me, has adopted the opinion which I expressed in my "Modern Classification of Insects," v. i., p. 150; observing, that "Hypocephalus is not a Longicorn, unless the term extends to the Cucujites, to which it properly belongs; this group intervenes between Cerambyx and Lucanus." [Thus taking up the relation of the Cucujidæ pointed out by me in the Zoological Journal.] Spondylus appears to me to be related to Callidium, Prionus and Leptura." [By which relations it would, as it appears to me, be

unnaturally separated from Hypocephalus.] Mr. Newman has subsequently published a proposed distribution of the Coleoptera into four, or rather seven, stirpes; one, Coleoptera Macrocera, composed of four divisions; Cerambycites, an entire group; Curculionites, Criocerites, and Cucujites, each of the last three being stated to be composed of two sub-groups; making seven in all. The Cucujites being composed of Trogosita, Passandra, Cucujus, Palæstes, Brontes, Parandra, *Hypocephalus*, Rhysodes and Cupes, and leading to Trictenotoma, Lucanus, and Passalus, among the Coleoptera Schismatocera (Lamellicornes, Latr.). Entomologist, p. 244.

Colobothea leucospilota (Plate 15, fig. 2).—Mr. Newman (who has been long engaged upon the investigation of the Longicorn beetles, and who has undertaken the description of the species of that group, brought from the Philippine Islands by Mr. H. Cuming, and now in the collection of the British Museum), has suggested to me that the name of this species cannot be maintained, there being already an insect of the genus with the same name, [See Lap. Hist. Nat. Col. 2, p. 459, C. leucospila,] I, therefore, propose to alter the name of the Philippine species to C. albo-notata.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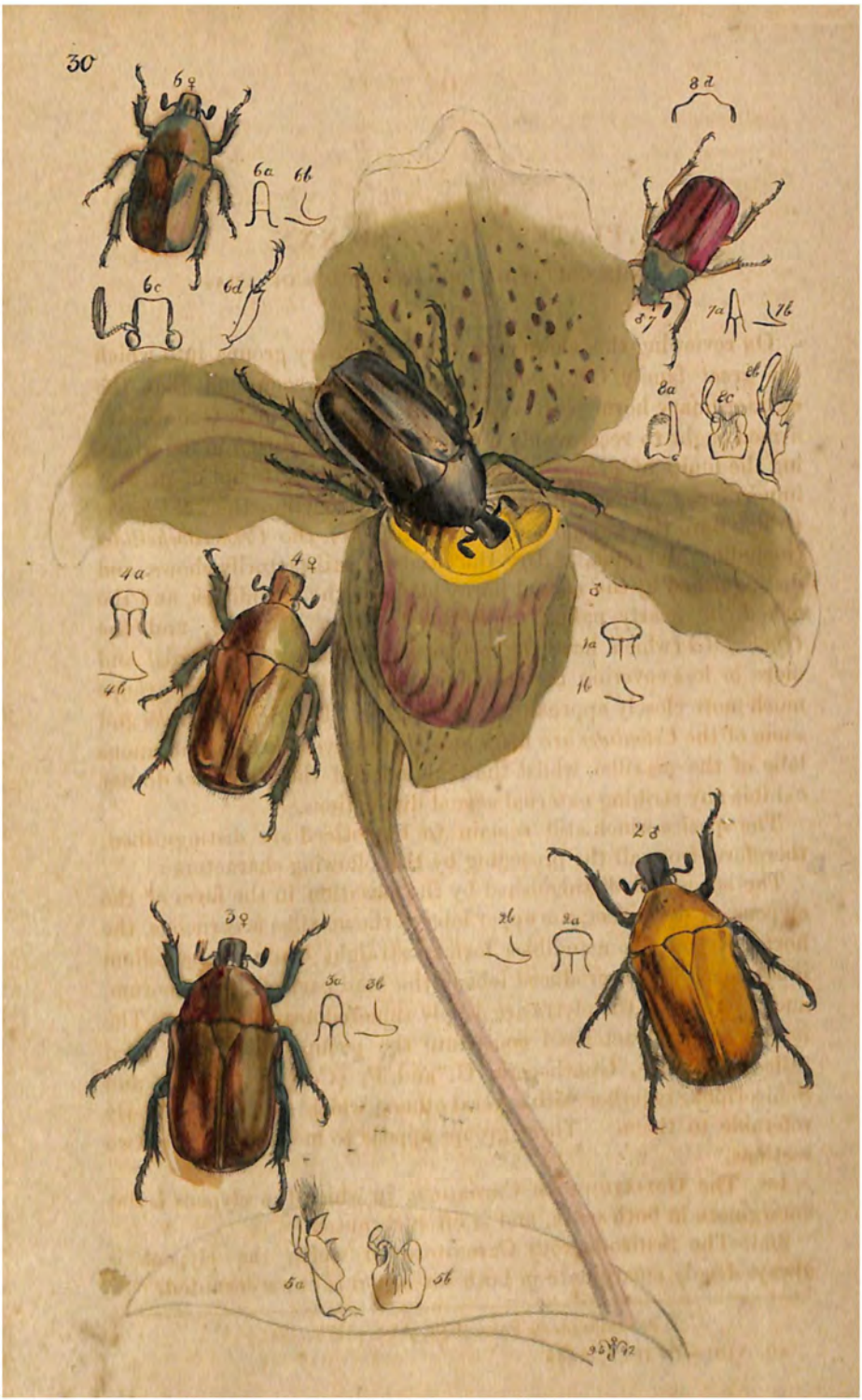
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PLATES XXIX AND XXX.

ON THE GOLIATHIDEOUS CETONIIDÆ OF ASIA.

PART I.

ON reviewing the characters of the primary groups into which the great family Cetoniidæ is divisible, we soon find that the extraordinary horns with which the heads of the male Goliathi are armed ought to receive only a secondary consideration in determining the limits of groups; other characters being found of greater importance. Hence it is that, after removing the *Trichiides* (which have the sides of the elytra straight), the *Cremastocheilides* (including Macroma, as Dr. Burmeister * satisfactorily shows, and distinguished by the curved horny blade of the mandibles, and the naked or nearly naked upper lobe of the maxillæ), and the *Gymnetides* (which have the pronotum produced backwards, and more or less covering the scutellum, we find the remaining groups much more closely approximating together. The *Ischnostomides* and some of the *Cetoniides* are distinguished however by the membranous lobe of the maxillæ, whilst the remainder of the *Cetoniides* do not exhibit any striking external sexual distinctions.

The species which still remain to be noticed are distinguished, therefore, from all the preceding by the following characters:

The sexes are distinguished by the variation in the form of the clypeus, or of the feet, the upper lobe of the maxillæ is corneous, the horny part of the mandibles forms a straight blade, the scutellum is not covered by a produced lobe of the hind part of the pronotum, and the sides of the elytra are deeply sinuated near the base. The insects thus characterised constitute the groups which have been called Goliathus, Gnathocera, G. and P. (Coryphe, M'L.), and Schizorhina, together with several others, which are more properly referable to them. These groups appear to me to constitute two sections.

1st. The GOLIATHIDEOUS CETONIIDÆ, in which the clypeus is not emarginate in both sexes, and is often cornuted.

2nd. The SCHIZORHINOUS CETONIIDÆ, in which the clypeus is always deeply emarginate in both sexes, and is never cornuted.

* Zeitschrift für die Entomologie, vol. 3, p. 275. (1841.)

It is impossible on referring to the former of these two sections, not to be convinced that the gigantic *Goliathi* of Africa are its types. They exhibit in the highest degree the male cornuted character of the section, but they are distinguished by two characters which are not found in the majority of the group—namely, the pronotum widest across the middle, and the upper lobe of the maxillæ dentated; they are, however, found in several eastern forms, with which our review will naturally commence.

NARYCIUS, *Dupont.*

(Guérin Mag. de Zoologie—Insectes, pl. 128.)

As originally described by M. Dupont, this genus comprised two species N. opalus and N. olivaceus, both from Madras; but, as already alluded to in pp. 5 and 70 (note †), they are but the sexes of a single species, for which the name of N. opalus should be retained as being that of the male.

By the kindness of M. Dupont, during my recent visit to Paris, (May and June, 1842,) I have been enabled to study this most interesting species in detail. The male *, of which an outline, copied from Guérin's "Magasin," was given in my plate 1, fig. 5, is distinguished by two long and very robust horns in front of the head. The mandibles (Plate 33, fig. 1 *a*) have the horny blade sharp and angularly dilated in the middle on the outside; the maxillæ (fig. 1 *b* and 1 *b* †) have the upper lobe short, and much curved, with the apex 3-dentate, and the outside strongly hairy; the inner lobe is produced at the tip into an acute point, and the palpi are short; the mentum (fig. 1 *c*) is short and broad, much narrowed in front and deeply emarginate with the labial palpi very short. The pronotum is broadest across the middle. The mesosternum (fig. 1 *d*, 1 *e*) is conical, acute, and porrected; the anterior tibiæ (fig. 1 *f*) are rather broad, with one strong tooth on the outside below the acute apex; the ungues (fig. 1 *g*) are furnished with a very short bisetose plantula, and the abdomen is channeled beneath.

The female † (Plate 33, fig. 1, copied from Guérin's figure) is more robust than the male, with the head produced into two short horns —a most singular character; the maxillæ are formed as in the male; the fore tibiæ (fig. 1 *h*) are externally furnished with three obtuse teeth; the middle and posterior tibiæ are much more strongly toothed than in the male; the abdomen is not channeled

* Cetoninus (Goliathus, Dicronocephalus, 5,) opalus, *MacLeay.*

† Cetoninus (Coryphe, Narycius, 5), olivaceus, *Mac Leay.*

beneath, and the mesosternum is porrected, conical, and acute, but rather broader at the base than in the male.

The differences between this genus and the true Goliathi consist in the sides, and not the centre, of the clypeus being cornuted; the armature of the fore tibiæ in the males, the different form of the mentum, maxillæ, and pronotum, and the cornuted head of the female.

It is to the genus Narycius, but forming a subgenus distinct from the type, that I refer a new and beautiful unique insect which has been communicated to me by that assiduous entomologist G. H. K. Thwaites, Esq., of Bristol, whilst this sheet is passing through the press (14th June, 1842), on which account the figures in illustration of it will not appear until the following number is published.

NARYCIUS, SUBGENUS CYPHONOCEPHALUS, *Westw.*

CHARACTERES EX INDIVIDUO MASCULINO DESUMPTI.

Corpus sublatum, caput breve, transversum, supra semicirculariter excavatum, clypeo plano valde deflexo, capitis lateribus in cornua duo elongata elevata apice curvata et postice furcata, productis (plate 33, fig. 2 *a*, caput supra, 2 *b*, e latere, 2 *c*, antice visum); antennarum clava subelongata. Maxillæ (fig. 2 *d*) lobo interno ad apicem in dentem acutum producto; lobo externo curvato, apice 3-dentato. Mentum (fig. 2 *e*) latum antice angustatum, margine antico valde inciso. Pronotum latum, valde gibbosum, margine antico supra caput rotundato, angulis anticis rotundatis; lateribus pone medium fere ad angulos posticos parallelis; elytra vix pronoto latiora, versus apicem parum angustata. Pedes antici subelongati, tibiis inermibus, tarsis tibiis brevioribus; unguibus maximis, onychiis distinctis (fig. 2 *h*); tibiæ 4 posticæ medio inermes; mesosternum subconicum porrectum (fig. 2 *f*, 2 *g*); abdomen valde canaliculatum.

In the more important of these characters the insect approaches the typical Narycius, differing chiefly in the form of the horns of the head and fore legs; whilst in the sub-elongated fore legs, and especially in the form of the horns of the head, it bears a nearer resemblance to Dicronocephalus; from which, however, the structure of the maxillæ, mesosternum, and anterior tibiæ, and its beautiful emerald colour, remove it.

NARYCIUS (CYPHONOCEPHALUS) SMARAGDULUS, *Westw.*

(Plate 33, fig. 2, and details.)

Lætissime viridis, clypeo et cornubus capitis tarsisque brunneis, femoribus tibiisque opalinis; supra sub lente tenuissime punctatus, punctisque majoribus distantibus, serieque punctorum versus suturam alterisque in disco elytrorum; his in medio ad lateres rugosis; corpore subtus magis aurato, jugulo nigro, metasterni linea longitudinali tenui brunnea, marginibusque segmentorum abdominalium aurantis. Long. corp. (absque corn. capit.) unc. 1. lat. ad basin elytr. lin. 6. Inhabits the East Indies. In the Museum of the Bristol Philosophical Institution, presented by Capt. D. Roberts.

MYCTERISTES, PROPER, *Laporte.* (PHILISTINA, *MacL.*)

Having figured and described the male of the only known species

of this genus, M. rhinophyllus (plate 1, fig. 3, and details), it will here be necessary only to notice the peculiarities of the female (Plate 29, fig. 1), which I had not seen when the first plate of this work was published. The only specimen which I have seen is contained in Dr. Horsfield's Javanese Collection at the East India House, and I have to return my thanks to that gentleman for an opportunity of examining and figuring it. Unfortunately the lower parts of the mouth have been removed by some previous observer, so that I cannot describe the mentum and labial palpi. The head is rather quadrate in front, with the angles slightly produced, the space between them being somewhat emarginate. The maxillæ (fig. 1 *a*) resemble those of the male, and have the upper lobe armed with four short teeth; the inner lobe is unarmed and rounded; the pronotum is unarmed in front and not elevated; the fore legs are much shorter than in the males, and externally 3-dentate, and the four hind tibiæ are strongly spurred beyond the middle. The general colour is much more obscure than in the male, scarcely shining, and clothed with luteous setose scales. The female was first described by M. Buquet (Ann. Soc. Ent. France, 1836, p. 203), from whom I have received a splendidly coloured male.

MYCTERISTES. (Sub-G. PHÆDIMUS.) *Waterhouse.*

Both the sexes of the only known species, *M.* (*P.*) *Cumingii*, having been fully described and figured, with their details in the first plate of this work, it will be only necessary to notice, that in the elongation of the fore legs of the male of this and the preceding species, and in the unporrected mesosternum, they lead to

DICRONOCEPHALUS*, *Hope.*

Like Narycius, the sides and not the centre of the clypeus are here cornuted, and like Mycteristes proper, the fore legs of the males are greatly elongated with the tibiæ tridentate; the pronotum is broadest across the middle, but the terminal lobe of the maxillæ is unarmed—affording the first approach to the following groups. The male only of the unique species composing this group is known, and is represented with its details in the first plate of this work (figure 4, 4 *a*—4 *e*).

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* This name was spelt Dicranocephalus in the Synopsis of General Hardwicke's Nepalese Coleoptera; but in the Coleopterist's Manual (p. 116) it is correctly written Dicronocephalus, —a name given in allusion to the two sickle-like horns of the head, (δίς et κρώνιον.)

In all the following groups we find the pronotum widest behind, or, at least, with the hind part not narrower than the middle, accompanied by the simple structure of the outer lobe of the maxillæ.

JUMNOS, *Saunders.*

This genus was proposed in the Transactions of the Entomological Society of London, (vol. ii., p. 176, pl. 16, fig. 1,) for the reception of a splendid male insect from the East Indies, *Jumnos Ruckeri*, characterised by the following peculiarities: The head square in front, and not cornuted, with the lateral margins tuberculated; the pronotum broad and very gibbous in front, the lateral margins beyond the middle nearly parallel; mesosternum porrected and oval; the fore legs very long and externally bidentate, and with the internal margin deflexed and denticulated; the fore tarsi long, with a brush of hairs on the underside of the terminal joint at the tip.

The female of a second species was described by the Rev. F. W. Hope, in Professor Royle's work on the Botany, &c., of the Himalayas, under the name of *Cetonia Roylii*, (Insects, pl. 1, fig. 1,). I am indebted to A. Melly, Esq., for the male of this species, which proves to be very closely allied to J. Ruckeri, as will be seen on comparing my plate 29, fig. 2, with Mr. Saunders's figure. The head of the female, (fig. 2 *a*,) like that of the male, is unarmed, with the clypeus nearly truncate in front; the maxilla of the male (fig. 2 *d*), has the inner lobe nearly simple, but in the female it is armed with a sharp hook (fig. 2 *b*); the mesosternum (fig. 2 *e* and 2 *f*), is much less produced than in J. Ruckeri, and is much broader than long, with the front margin rounded. The fore legs of the male are moderately long, and both internally and externally toothed and serrated, as in J. Ruckeri, except that they want the brush of hairs on the underside of the last joint of the tarsi. The fore tibiæ of the female (pl. 29, fig. 2 *c*), are also externally bidentate, but they are simple on the inside. The four hind tibiæ are slightly spurred beyond the middle in the male, and strongly in the female, they are thickly clothed within with fulvous hairs.

RHOMBORHINA, *Hope* (Col. Man. 1, p. 120 *).

In the unarmed quadrate form of the clypeus of both sexes, and the bidentate tibiæ of the females, this genus approaches Jumnos, but

* Mr. MacLeay (Cet. So. Africa, p. 30), has ingeniously transposed Mr. Hope's types of his two genera, giving Hardwickii as the type of Rhomborhina and Opalina as that of Trigonophora (as he misterms it).

the simple tibiæ of the males of these insects at once distinguish them from the last-mentioned group. The antennæ do not materially differ in the sexes; the inner lobe of the maxillæ of the female of Rh. opalina (pl. 30, fig. 5 *a*), is armed with a strong horny hook, which is much less strong in the males (Rh. hyacinthina ♂, *e. g.*). The mentum is deeply cleft in front, its hind part being rather broader than the front (pl. 30, fig. 5 *b*). The club of the antennæ does not vary in size in the opposite sexes, and the mesosternal process is generally porrected, broad, and blunt, but it differs in shape in the different species. The fore tibiæ of the females are bidentate; the hind tibiæ in the same individuals are much more strongly spurred beyond the middle than in the males. The following are the species of this genus:—

Species I.—*Rhomborhina resplendens.* Rh. "aureo-viridis nitidissima, versicolor, elytris subtilissime seriato-punctatis; basi, limbo scutellari, sutura tarsisque nigro-violaceis." Schön.

Syn.—*Cetonia resplendens*, Swartz, in Sch. Syn. Ins. vol. i. part 3, app. p. 51, (1817.) *Goliathus Heros*, Latreille, Gory, and Perchéron, Mon. Cet. pl. 26, fig. 3.

Obs.—The abdomen of the male is not longitudinally impressed beneath, and the fore tibiæ have a vestige of a tooth below the apex on the outside.

Species II.—*Rhomborhina Mellii*, Gory and Perchéron, Mon. Cet. pl. 26, fig. 4.

Species III.—*Rhomborhina distincta*, Hope, in Trans. Ent. Soc. Lond. vol. iii., p. 63.

Obs.—This species was described from a specimen sent from Assam, which appears to me to be specifically identical with Rh. Mellii.

Species IV.—*Rhomborhina opalina.*

Syn.—*Cetonia opalina*, Hope, in Syn. Nepal. Col. p. 24, Gory and Perchéron, Mon. Cet. pl. 26, fig. 5. (Goliathus op.)

Obs.—The male is narrower than the female. The scutellum is sometimes only dark-coloured at the apex; the hairs of the four posterior tibiæ and abdomen are fulvous, and the mesosternum is porrected and broad in front, almost as in Rh. hyacinthina (pl. 30, fig. 1 *a*). Captain Parry has received it both from Nepaul and the Himalayas.

Species V.—*Rhomborhina apicalis*, Westw. (Plate 30, fig. 2.) Læte cupreo-fulva, elytris apice scabris et nigris, tibiis tarsisque nigris et nigro-setosis, thorace subtus nigro, abdomineque cum femoribus æneo. Long. corp. lin. 15.

Habitat in Nepalia, D. Hardwicke; et Assam?

In Mus. Soc. Linn. Lond. et Soc. Merc. Ind. Orient.

Obs.—The clypeus is alike in both sexes—large and rounded in front. The sides of the pronotum and the disc of the elytra are finely punctured, some of the punctures on the latter forming irregular lines. The apex and sides of the abdominal segments are clothed with short black hairs. The fore tibiæ of the females are not so strongly spurred as in some of the species. There is an impression on each elytra beyond the middle; the mesosternum is very broad and rounded in front (fig. 2 *a*, 2 *b*). The male has the abdomen broadly but very shallowly impressed.

Species VI.—*Rhomborhina Japonica.* (Plate 30, fig. 4.) Hope, in Trans. Ent. Soc. Lond., vol. iii. p. 64. In Mus. D. Hope et Dupont.

Obs.—The short broad form of this species together with its large-sized head distinguishes it from the rest of the genus. The hairs on the hind tibiæ and abdomen are short and fulvous. The scutellum is concolorous with the pronotum and elytra, the mesosternal process is of moderate size, nearly as long as broad, rounded, and slightly dilated in front (pl. 30, fig. 4 *a* and 4 *b*, the former figure, representing the apical portion, scarcely elongate enough). The fore tibiæ of the females are very broad and strongly bidentate.

Species VII.—*Rhomborhina microcephala*, Westw. (Plate 30, fig. 3.) Rh. brunneo-olivacea nitidissima, capite parvo, clypeo subquadrato, tibiis anticis ♀ angustis mediocriter bidentatis; pedibus cyaneo-nigris, nigro-setosis ♀. Long. corp. lin. 13—14. Habitat in Montibus Himalayanis, D. Mearcs. In Mus. D. Parry.

Obs.—This very robust species has a remarkably small head, and the fore tibiæ in the female are also very narrow, and but slightly bidentate. The upper side of the body is of a dark olivaceous brown colour inclining to a deep copper in certain lights; the scutellum and suture of the elytra being concolorous, but their shoulders are marked with a dark patch: the underside is of a dark æneous colour tinged with blue; the abdomen being blacker. The mesosternal process is narrow and not dilated in front, with the apex rounded (fig. 3 *a* and 3 *b*). The hairs of the hind feet and abdomen are short and black.

Species VIII.—*Rhomborhina hyacinthina*, (plate 30, fig. 1,) Hope, in Trans. Ent. Soc. Lond. vol. iii. p. 62 *.

This very distinct species was received by Mr. Hope from Assam; Captain Parry has since received it from Sylhet; specimens are also contained in the fine collection recently received by the Entomological Society from Miss Sealy, forwarded by Mr. M'Clelland. The latter specimens are entirely jet black, except the feet, but Mr. Parry's have the front and hind parts of the body slightly tinged with green and blue above, and more particularly beneath. They do not, however, appear to me to be specifically distinct. The hairs on the hind tibiæ and abdomen are short and black. The mesosternal process (fig. 1 *a*, 1 *b*,) is large and transverse, the sides being rather more angulated in the middle than in fig. 1 *a*. The female has the fore legs broad and acutely bidentate, and the hind tibiæ acutely spurred beyond the middle, the spurs being, however, small; in the male, (as in the rest of the genus in this sex,) they are almost obliterated. The abdomen of the male is not longitudinally impressed beneath.

Species IX.—*Rhomborhina clypeata*, Dupont's MSS. (Plate 3½, fig. 3.) Rh. viridis punctulatus, thoracis lateribus elytrorumque disco postice magis auratis, clypeo magno, antice subtruncato, mesosterno fere circulari basi truncato, pedibus posticis fulvo-setosis. Long. corp. lin. 12½. Habitat in Japonia. Mus. Dupont et Buquet, Parisiis.

This is the smallest species of the genus, and is distinguished by its comparatively large quadrate clypeus with the front angles rounded off, and its short elytra; the disc of the head and sides of the pronotum are very finely granuloso-punctate; the fore tibiæ in the females (I have not seen the male) are broad and strongly bidentate; the mesosternal process is porrected and almost rounded, but scarcely broader than the porrected front of the metasternum on which it is placed, with its base truncated. The tips of the tibiæ and the tarsi are black; the under side of the thoracic region is more golden than above. M. Buquet's specimen is labelled Japonica, from which species, however, it is abundantly distinct.

* Mr. Hope's memoir having been read in 1839, his name is retained in preference to the manuscript one of azuripes, Burm., which I find attached to Mr. Hope's typical specimen.

Species X.—*Rhomborhina pilipes*. Melly's MSS.

I regret that, owing to Mr. Melly's absence from England, I am unable to give a description and figure of this fine species which I saw last year in his rich cabinet: Dr. Burmeister, however, made a detailed description of it, which will, I believe, be shortly published.

Obs.—In addition to the typical Rhomborhinæ above described, Mr. Hope (Col. Manual, 1, p. 120), adds Gol. Hardwickii, H., Gol. Roylii, Hope, and Cetonia cincta, Zool. Journ. at the end of the genus. The first of these three species is the type of his own genus Trigonophorus. G. Roylii is a Jumnos, and C. cincta is referable to the African group to which C. tænia, depressa, &c. belong.

ANOMALOCERA, *Hope*.

As Mr. Hope's account of this curious group was recently read before the Linnæan Society, accompanied by figures of the male of the typical species and ample structural details, I shall here only mention that in its simple clypeus in both sexes, and in the formation of the fore tibiæ in the opposite sexes, as well as in the structure of the trophi it agrees with Rhomborhina; from which it is separated by the great elongation of the club of the antennæ of the male, the deep longitudinal impression of the under side of the abdomen in the same sex, and the elongated narrowed mesosternum. The genus is also closely allied to the quadrate-clypeated Gnathoceræ G and P, such as Gn. læta, &c. By the kindness of Captain Parry, I am enabled to complete the illustration of this genus by giving a figure of the female (Plate 30, fig. 6), the head and antennæ of the male (fig. 6 *c*), the mesosternal process (fig. 6 *a* 6 *b*), and the fore tibia and tarsus of the male. Captain Parry fortunately possesses a single specimen of each sex of the only known species (*A. Parrii*, Hope), which he received from the Himalayas in a collection formed by — Meares, Esq.

TRIGONOPHORUS, *Hope* (Syn. Nepal. Col. in Gray's Zool. Miscell. p. 24, 1831).

This genus was simply indicated by name, in the work above quoted, for the Cetonia Hardwickii;—an insect which, in the structure of the fore legs in the opposite sexes, (those of the males being longer than those of the female, with the tibiæ unarmed in the former and bidentate in the latter,) and in the want of a longitudinal impression on the under side of the abdomen of the males, agrees with the typical Rhomborhinæ. But here we find not only the clypeus but the hind part of the head cornuted, and that too, singularly enough, in both sexes; the distinction of sexes in this

respect consisting in the shape of the hinder horn of the head. Here, however, we also find a curious distinction; for this horn in the female of Tr. Delessertii is of the same acute shape as in the males of the two other species; the hind tibiæ of the males have the spur beyond the middle of the limb more distinct than in the Trigonophoræ. Another distinguishing character, separating these insects from the last-named genus, is the narrow elongated form of the mesosternal process. As there are now several species known agreeing together, I have retained the generic name. The maxillæ offer the same sexual distinction which has been already noticed in some of the preceding groups. The mentum is broad and very deeply incised in the front.

Species I.—*Trigonophorus Nepalensis*. (Plate 29, fig. 3 ♂.)

Syn.—*Cetonia Nepalensis*, Hope, in op. sup. cit. ♂.
Cetonia Hardwickii, Hope, in op. sup. cit ♀.
Gnathocera Hardwich, Gory and Perch. Mon. Cet. Pl. 19, fig. 1 ♀.
Cetoninus (*Coryphe*, *Rhomborhina*, 1,) *Hardwickii*, MacLeay. Cet. Soc. Afr. p. 30.

This handsome insect has the posterior horn of the head acutely triangular in the males, but oblong and truncate at the tip in the females. The species is liable to considerable variation in colour on the upper surface, the female being sometimes (as figured by Gory and Perchéron) black or æneous black, and sometimes of the same dark green colour as the male represented in my figure 3. The rich orange colour of the femora and tibiæ (except at the tips), and of the posterior coxæ, is a very distinguishing character of the species. Plate 29, fig. 3 *a*, represents the head of the female from above, and 3 *b* seen sideways; 3 *c*, the maxilla of the male, and 3 *d*, that of the female; 3 *e*, the mandible; 3 *f*, the mentum; 3 *g*, the fore tibiæ of the female; 3 *h*, the mesosternum seen sideways; and 3 *i*, the same seen from beneath. As usual in such cases, the specific name which had been applied to the male insect is here retained.

Species? II.—*Trigonophorus Cantori*.

Syn.—*Rhomborhina? Cantori*. Hope in Trans. Ent. Soc. Lond. vol. 3, p. 63.

Having examined the typical specimen described by Mr. Hope, I am able to state that the front of the head is mutilated and covered with dirt, and that there is therefore no longer reason for doubting that the frontal horn was present, and of the same form as in the other species of the genus. In other respects (except in being broader) it agrees with the female of Tr. Nepalensis, from which I do not consider it to be specifically distinct. Mr. Hope has not mentioned the rich orange colour of the posterior coxæ, and which are visible beyond the sides of the elytra.

SPECIES III.—*Trigonophorus Saundersii*, Westw. (Plate 29, fig. 5). Tr. aureo-viridis, elytris tenuissime rugosulis et punctatis, cornu frontali capitis brevi trigono; postico acuto, ♂, truncato, ♀; capite et abdomine subtus pedibusque brunneo-castaneis, metathorace subtus viridi. Long. corp. lin. 12. Habitat in India Orientali. In Mus. D. Saunders et Merc. Ind. Orient. Londini.

This is smaller than any of the other species, and is distinguished from Tr. Nepalensis by the much shorter horn at the front of the head; the upper surface of the head is olivaceous green and punctured, the angles in front of the eyes forming obtuse elevated tubercles, instead of being acute as in Tr. Nepalensis; the hind horn of the head is nearly flat, broad, and truncated in front in the female, but acute in the males; the sides of the pronotum are much more thickly punctured than the disc; the elytra are more strongly punctate than in Tr. Nepalensis, with the disc slightly rugose, giving it a silky appearance according to the play of light. The podex is green. The legs, as well as the underside of the head and abdomen, are of a rich marroon colour, the fore feet being formed as in the other species. The tarsi are black. The mesosternum is long, narrow, porrected, and bent rather downwards. The hairs on the hind feet and sides of the abdomen are few in number, thin and dark-coloured; the entire metasternum is green, forming a strong contrast with the rich colour of the other parts of the underside of the body.

SPECIES IV.—*Trigonophorus Delessertii*. (Plate 30, fig. 4).

SYN.—*Goliathus Delessertii*, Guérin. Révue Zoologique par la Soc. Cuvier., 1839, No. 8, p. 229.

This magnificent species was kindly sent to me from Paris by M. Guérin Meneville, for illustration in this work. The detailed description will be found in the Révue Zoologique, above referred to;—a work containing descriptions of a vast number of new species of insects, as well as notices of many works of Entomology, which are almost unknown to English Entomologists. The species was found upon the plateau of the Neilgherries near Otacamund and Kotirghery, by the zealous traveller in honour of whom it has been named. M. Guérin describes the posterior horn of the head as being "plate, dirigée en avant et en bas, aplatie;" not noticing its triangular shape, which is most singular, when it is considered that the insect is a female, and that the females of the other species of the genus have this horn truncate.

The plants figured in Plates 29 and 30 are two fine species of Cypripedium; that in the former Plate being C. venustum, (a native of Nepaul) drawn from a specimen which blossomed finely in the Botanic Gardens at Kew, at the beginning of the present year; and Plate 30, representing the Indian Cyp. insigne.

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PLATE XXXI.

ILLUSTRATION OF A NEW INDIAN SPECIES OF PAPILIO.

THE beautiful species of Papilio figured in the acccompanying plate belongs to Boisduval's seventeenth group of the genus; but is distinguished from the majority by the great elongation and narrowness of the wings, and the very broad and spatulated tail; and from all, by the bright red base of all the wings on the underside. It is most nearly related to the two species P. Philoxenus and P. Minereus of Gray (Zool. Misc. p. 32), which were described from unique specimens contained in General Hardwicke's collection now at the British Museum, namely, a male of the former and a female of the latter species. From this circumstance, united with the evident relationship between the insects, M. Boisduval was induced, in his "Histoire Naturelle des Lépidoptères," to consider these two individuals as the sexes of one species, for which he retained the name of P. Philoxenus. The collection of Assamese insects formed by Mr. Griffith, now in the possession of R. H. Solly, Esq., and that forwarded from Sylhet to the Rev. Mr. Stainforth, now in the possession of Mr. H. Doubleday, have enabled me to determine the specific distinction of the two species; and as there is no figure of either (except the wretched one of Minereus given by Donovan, Naturalist's Repos., vol. 4, pl. 140, which Boisduval has omitted to quote), I propose to illustrate them a future number of this work. The following are the characters of the new species figured in the accompanying plate, which was also contained in Mr. Stainforth's collection, above mentioned.

PAPILIO BOOTES, *Westw.*

P. alis nigris, valde elongatis, posticis spathulato-caudatis, harum disco plaga media alba, vena nigra in duas partes divisa, macula ad angulum ani, lunulisque tribus submarginalibus rufis; incisionibus pallide marginatis, caudaque bimaculata; alis subtus similibus at pallidioribus; omnibus plaga magna basali rufa; maculis lunulisque rufis majoribus, capite, collo et corpore infra rufo. Expans. alar. unc. 5.

Inhabits Sylhet in the East Indies. D. Stainforth. In Mus. H. Doubleday.

Since the publication of the last number of this work, I have been favoured with another translation of the song "I'd be a

Butterfly," which appeared in the "Times," on the 8th of August, 1828, shortly after the publication of that by Archdeacon Wrangham. The elegance of many of the lines will be an ample excuse for my introducing it into a vacant page.

PAPILIO. (*Versio altera.*)

Proles arbusti, Papilio ut forem,
Violas, et lilia, et rosas halans;
Erraticus usque de flore ad florem,
Quæ pulchra, quæ suavia sunt, osculans!
Non opum sentirem, non regni furorem,
Ut sternat se coràm me nemo, curans:
Modò proles arbusti Papilio si forem,
Quæ suavia, pulchraque sunt, osculans!

O, nôssem caduceum Magæ subtrahere,
Has alulas pulchras induerem mî:
Æstivo sub axe vagantur in aëre,
Et rosâ cubant, ubi gemis, Atthi!
Sit vigil et cautus, qui dives, necesse est;
Nil afferunt sceptra, miserias nî:
Papilionem me ter satìs esse est,
Rosâ cubantem, cum gemis, Atthi!

Quid quòd autumni cùm redit tempestas,
Vanescunt errones hi mox parvuli:
Multo plus præstat, cum finiit æstas,
Morientibus omnibus pulchris, mori!
In hieme vitæ, queis ridet hic status,
Arcento, si poterunt, ictum leti:
Fiam Papilio, degamque paratus,
Morientibus omnibus pulchris, mori!

The plate also represents a single flower of the Indian Dendrobium moschatum of Hamilton, of which a most splendid specimen, with a great number of pendent branches covered with blossoms, formed one of the finest ornaments at the June fête at the Horticultural Society's Gardens at Chiswick, 1842.

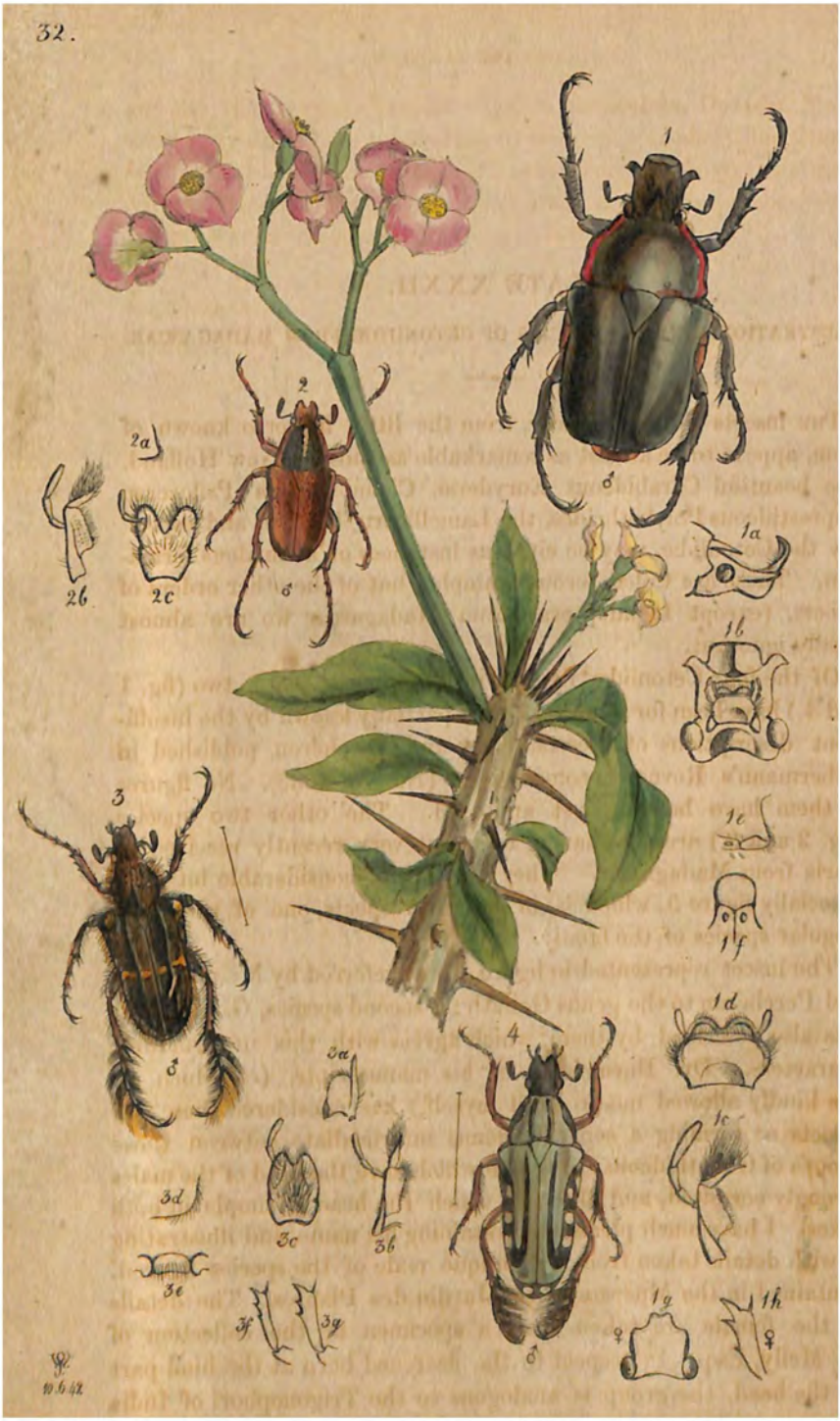
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PLATE XXXII.

ILLUSTRATIONS OF SOME SPECIES OF CETONIIDÆ FROM MADAGASCAR.

THE insects of Madagascar, from the little hitherto known of them, appear to be almost as remarkable as those of New Holland. The beautiful Carabideous Euryderæ, Cicindelideous Psiloceræ, Buprestideous Polybothrides, the Lamellicorn Epilissi, and especially the Cetoniidæ, may be cited as instances of anomalous formation. These are Coleopterous examples, but of the other orders of insects, (except Lepidoptera,) from Madagascar we are almost totally ignorant.

Of the four Cetoniidæ figured in the opposite plate, two (fig. 1 and 4,) have been for some years past partially known by the insufficient descriptions of Messrs. Gory and Perchéron, published in Silbermann's Revue Entomologique (No. 15, 1835). No figures of them have however yet appeared. The other two species (fig. 2 and 3,) are new, having been but very recently received in Paris from Madagascar. They are both of considerable interest, especially figure 3, which is, in several respects, one of the most singular species of the family.

The insect represented in figure 1 was referred by Messrs. Gory and Perchéron to the genus Goliath; a second species, G. ochreata, was also described by them, which agrees with this in structural characters. Dr. Burmeister in his manuscripts, (of which he has kindly allowed me to avail myself,) has considered these two insects as forming a separate genus intermediate between those groups of Goliathideous Cetoniidæ which have the head of the males strongly cornuted, and those in which the head is simple in both sexes. I have much pleasure in retaining his name, and illustrating it with details taken from the unique male of the species figured, contained in the Museum of the Jardin des Plantes. The details of the female are taken from a specimen in the collection of A. Melly, Esq. In respect to the flattened horn at the hind part of the head, the group is analogous to the Trigonophori of India

and the African group* typified by Cet. bimaculata, De Geer. (flavomaculata, Auct.), and especially to the genus Lophorrhina, Burm. MSS. (Cetonia 5-lineata, F. and pentachordia, Klug), also from Africa, (but unknown to Mac Leay,) which, like the present genus possesses tridentate anterior tibiæ in both sexes.

GENUS PLÆSIORRHINA, *Burm.*, MSS.

Plæsiorrhina reflexa, (Plate 32, fig. 1.)

SYN.—*Cetonia (Goliath) reflexa*, Gory and Percheron (Descr. de quelq. nouv. Esp. de Cétoines de Madagascar, in Silb. Rev. Ent. 1835, No. 15).

The large size of the head of the male of this species, with its dorsal and lateral horns, render it a very conspicuous insect. It is but moderately shining, and but very slightly punctured, being of a black colour with a greenish tinge, except the pronotum and elytra, which are slightly tinged with blue; the dorsal horn of the head has a castaneous central line down the centre, the sides of the pronotum are castaneous as well as the two spots on the posterior margin; the base of the metacoxæ and the exposed part of the mesosternum are luteo-castaneous. The general colour of the undersurface of the body is a dark apple green. The femora and reflexed undersides of the pronotum luteo-fulvous, with a slightly greenish tinge. Fig. 1 *a* represents the head of male, seen from the side, and 1 *b* from beneath; 1 *c*, the maxilla of the male, the lower lobe destitute of any tooth; 1 *d*, the mentum, deeply channeled parallel to the tip (as in the typical Goliathi), concealing the base of the labial palpi; 1 *e*, the mesosternum seen laterally, and 1 *f* seen from beneath; 1 *g*, the head of the female, and 1 *h*, the fore tibiæ of the same sex. The female has the four posterior tibiæ also more strongly spurred, beyond the middle, than the males, and the mesosternum broader and somewhat more triangular.

The female of Goliath ochreata, G. and P., has the sides of the head straight, the front part forming a short triangle with the point in front; the inner lobe of the maxillæ is much broader than in Pl. reflexa ♂, but without any tooth; the mentum is very similar in shape and structure to that of Tmesorrhina concolor (pl. 19, fig. 3 *c*), being, however rather broader, and the mesosternum is considerably more porrected than in Pl. reflexa. It is in the collection of the Rev. F. W. Hope.

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* ANISORRHINA, *Westw.*

Tibiæ anticæ ♂ inermes, ♀ extus 3-dentatæ. Tibiæ 4 posticæ ♂ simplices, ♀ latiores pone medium calcaratæ. Maxillæ lobo interno spina acuta terminato, lobo externo nonnullis bifido. Mesosternum porrectum conicum. Tarsi antici ♂ crassiores quam in ♀. Clypeus formæ variabilis sc. in A. bimaculata De G. caput maris antice conico-elevatum et occipite spina plana obtusa armato; fœminæ vero simplex inerme et antice emarginatum: in A. umbonata Kl. caput utriusque sexus inerme et antice fere rectum est.

GENUS SCHIZORHINA, *Kirby*.

Schizorhina Guerinii, Westw. (Plate 32, fig. 2.) Nigra, prothoracis lateribus elytrisque piceo-rufis, his valde variolosis, clypeo valde inciso, antennis pedibusque castaneis, tarsis longissimis, mesosterno haud producto. ♂ Long. corp. lin. 10. Inhabits Madagascar. In Mus. D. Guérin Meneville, Parisiis.

This interesting species will not enter into either of the five groups of the genus proposed by Mr. MacLeay (*see* p. 103 *ante*). The head is black, with the deeply cleft clypeus and antennæ castaneous, it is clothed on the disc with fulvous hairs. The pronotum has the sides nearly straight, the hind part being much broader than the anterior, which has an elevated tubercle in the middle. The disc is very irregularly punctured, with a slightly raised line of punctures down the middle. The disc is black, with the sides of a pitchy red, tinged with purple. The elytra are broader at the base than the hind part of the pronotum; they are very flat on the disc, the extreme lateral margins being, in fact, slightly elevated, and they become gradually narrowed from the base, the apex of the suture not being spined. They are very strongly variolose on the disc, the punctures being largest and most irregular before the middle. They are of the same colour as the sides of the pronotum. The legs are castaneous and very long. The anterior tibiæ in the male, (I have not seen the female,) are externally bidentate, the middle tibiæ spurred beyond the middle, and the hind tibiæ, with the apical portion on the inside, dilated. The mesosternum (fig. 2 *a*) is not advanced; the maxillæ have the inner lobe quite simple (fig. 2 *b*); and the mentum (fig. 2 *c*) is broadest and emarginate in front. The abdomen of the male is channeled down the middle beneath.

Schizorhina plumigera. (Plate 32, fig. 4.)

SYN. *Cetonia plumigera*, Gory and Perch. op. cit. No. 10.

This is another anomalous species, which, from the form of the clypeus, must be referred to Schizorhina, from all the previously known types of which, however, it differs, both in form and in the singular clothing of hairs on the inside of the hind tarsi. The body is deflexed at each end, the clypeus deeply bifid, the mesosternum porrected and acute, the pronotum with two, and the elytra with four, longitudinal carinæ. The head is of a black colour, pitchy in front, the antennæ pitchy black, the pronotum clothed with very fine greenish-grey pile, with the sides and the two costæ shining black: the elytra are also similarly coloured with the costæ and sides black, the latter with the spots and apex white; there are also two white spots on the podex above. The body is black beneath with white transverse lines (interrupted in the

middle) on the thorax and abdomen, the legs and the hairs of the hind tarsi are black, the tips of the hind femora and hind tibiæ are pitchy red and curved. The anterior tibiæ are simple in the males. Specimens are in the Museum of the Jardin des Plantes, and of M. Dupont of Paris.

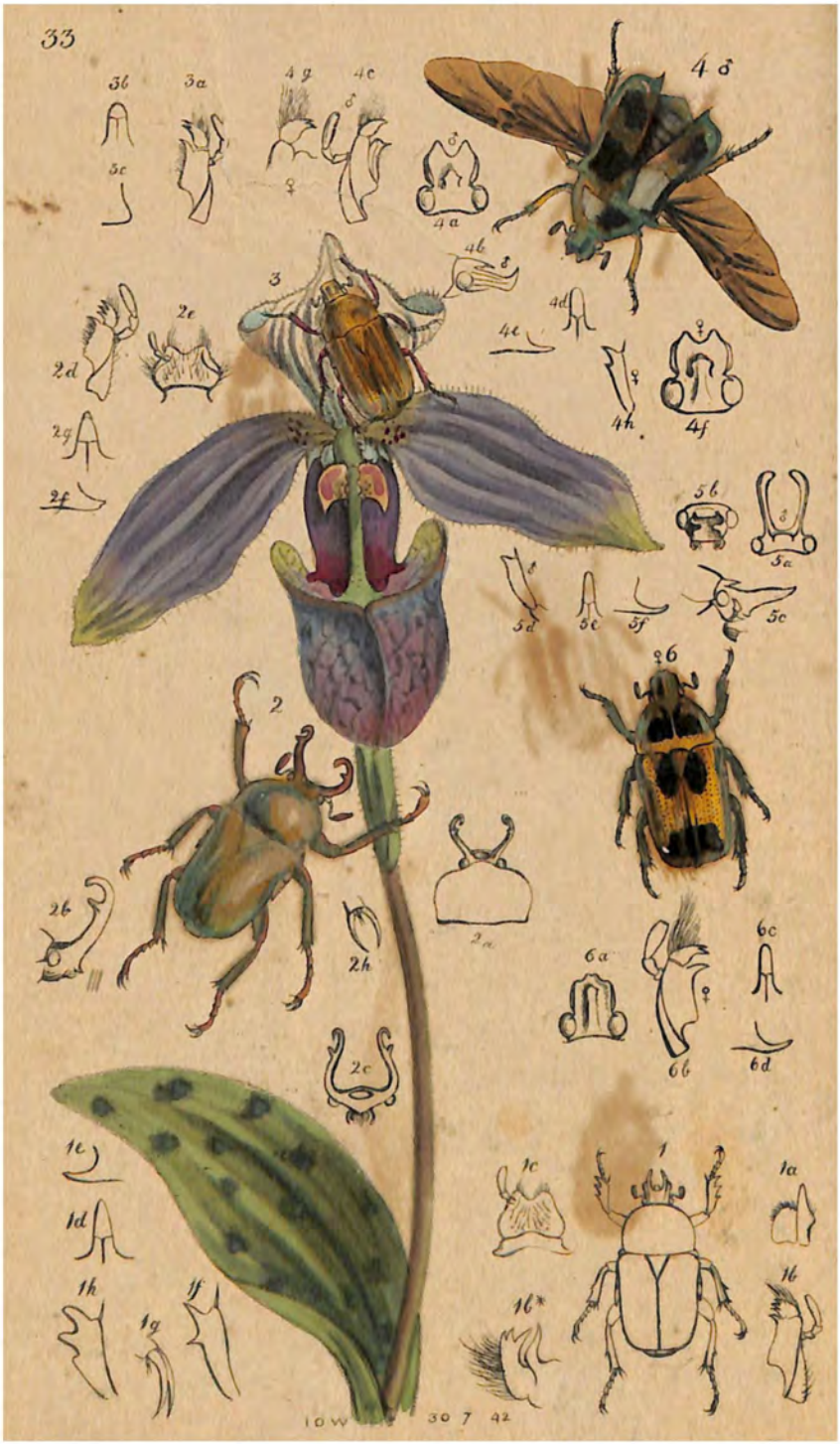
Genus CHROMOPTILIA. *Westw.*

I have no hesitation in regarding the insect represented in figure 3, as the type of a group distinct from Schizorhina. The form of the prothorax is altogether unlike that of any of the known Cetoniidæ; and it will be remembered that the form of this portion of the body is one of the most important characters in the group. The species has, indeed, been regarded by more than one entomologist to whom I have shown it, as one of the Trichiides; but the sinuated sides of the elytra, as well as the structure of the mouth, assert its claim to be considered as a Cetoniideous insect; indeed the structure of the clypeus, porrected maxillary lobes, and hairy hind feet, point out its relation to Schizorhina, and especially to such species as S. plumigera. Figure 3 *a* represents the mandible, 3 *b* the maxilla of both sexes destitute of any tooth on the inner lobe, and with the upper lobe entire, horny, acute, and very setose; and 3 *c* the mentum, oval in form and deeply notched in front. The head is alike in both sexes, and not cornuted. The clava of the antennæ of the male is slightly more elongated than in the female. The mesosternum is short, gibbose, and not at all produced (figs. 3 *d*, 3 *e*), the elytra are broadest at the base, each with a strongly elevated costa running down the centre nearly to the tip. The legs are long, the fore legs of the male being rather longer than those of the female. The anterior tibiæ are 3-dentate in both sexes, those of the female (fig. 3 *g*) being rather broader than those of the male (fig. 3 *f*); this is the only distinguishing external character which I can find, as the abdomen of the male is not longitudinally channeled: the hind tibiæ are slightly spurred beyond the middle in both sexes. The hind tarsi, in both sexes, are long, and clothed on each side with bundles of very long hair, those on the outside of the last two joints of the tarsi being bright fulvous, whilst all the others are black.

Species Unica.—*Chromoptilia diversipes*, Westw. Nigra, nitida, punctata, valde luteo-pilosa, antennis tarsisque 4 anticis piceis, vitta transversa tenui media interrupta, punctisque nonnullis elytrorum maculisque duabus pygidii albidis; tarsis posticis nigro et fulvo pilosis; corpore infra nigro, griseo valde piloso. Long. corp. lin. 6½.

Inhabits Madagascar. Mus. Westwood, &c.

The plant figured in the plate is the charming Euphorbia splendens of Madagascar, drawn rom a specimen communicated from the Botanic Garden Kew.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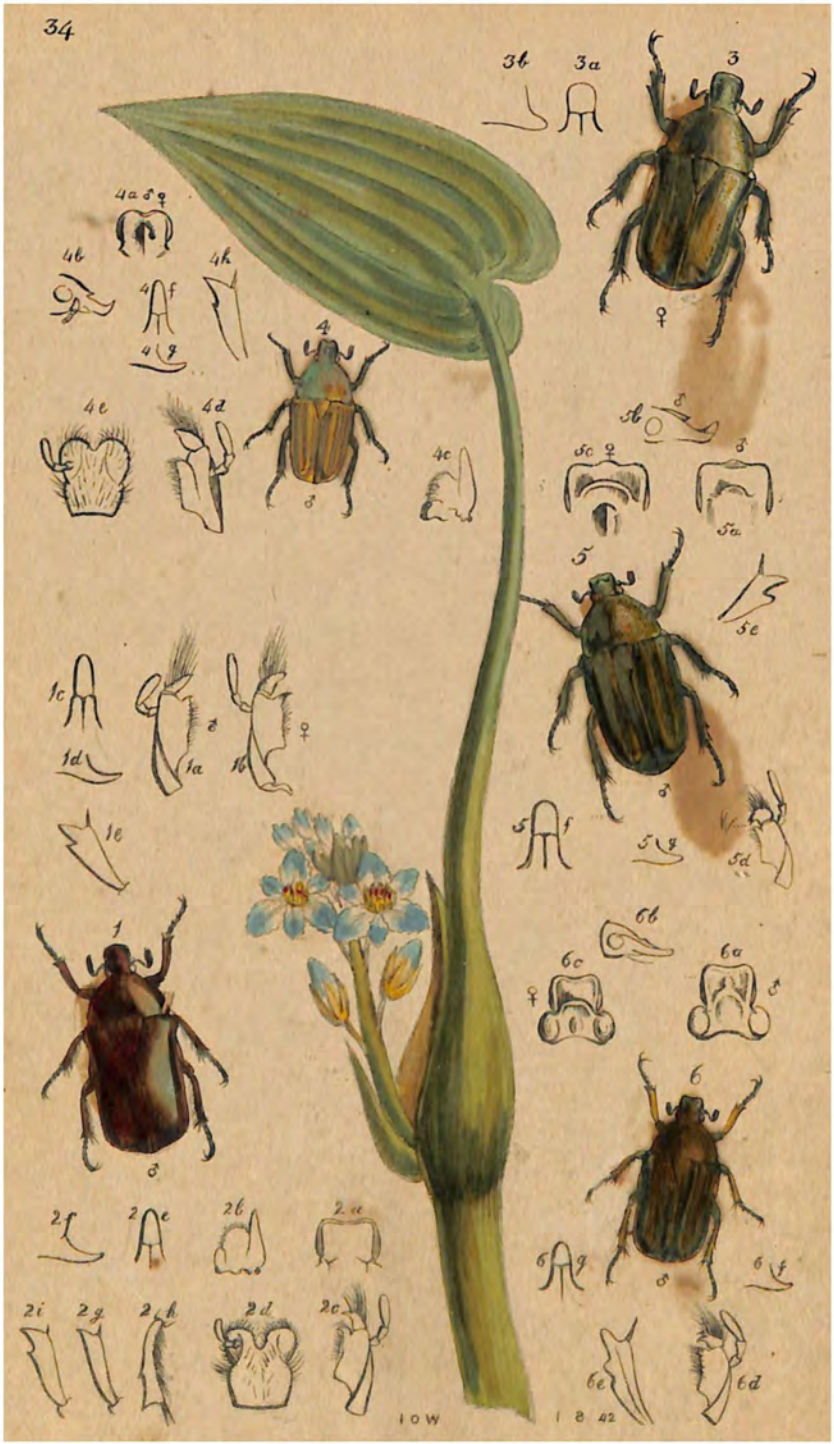
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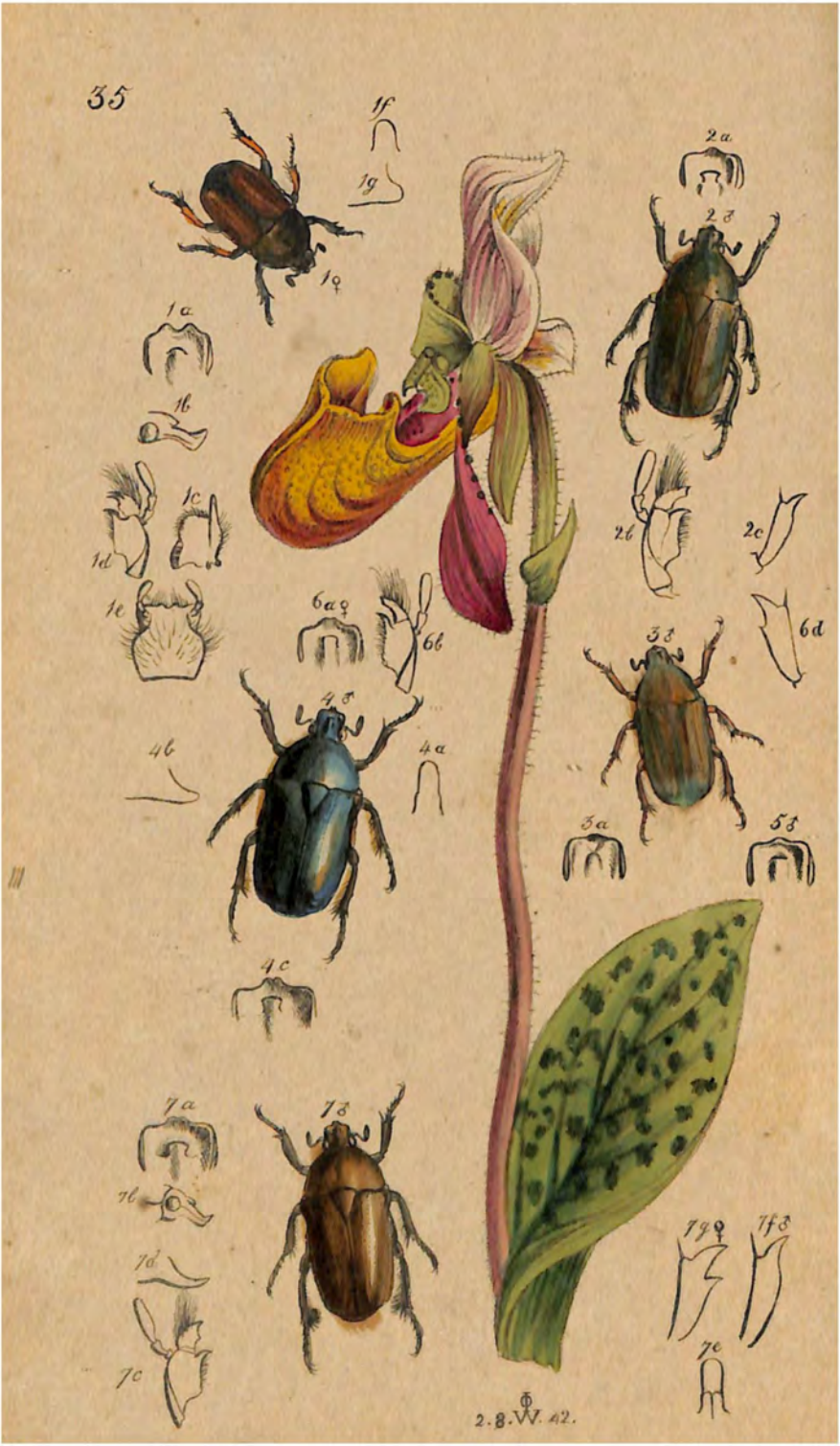
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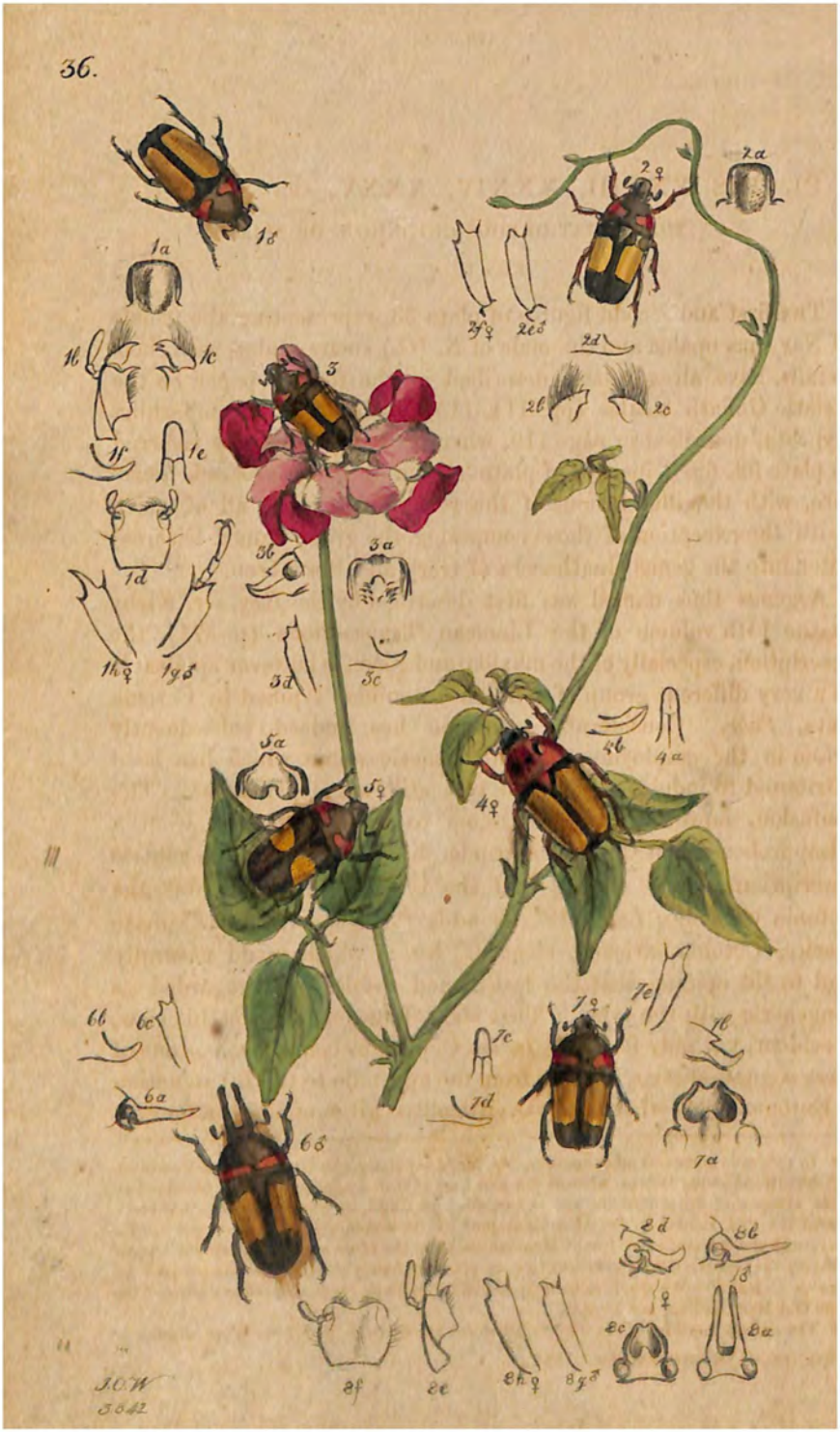
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PLATES XXXIII, XXXIV, XXXV, AND XXXVI.

ON THE GOLIATHIDEOUS CETONIIDÆ OF ASIA.

PART II.

THE first and second figures of plate 33, representing the female of Narycius opalus and the male of N. (C.) smaragdulus, with their details, have already been described in the former paper on the Asiatic Goliath beetles (pp. 114, 115), as has also Rhomborhina clypeata, described in page 119, where it was accidentally referred to plate 33, fig. 3, instead of plate 34, fig. 3. I now proceed, therefore, with the illustrations of the remaining species, all of which (with the exception of those composing the group named Diceros) enter into the genus Gnathocera of Gory and Perchéron.

A genus thus named was first described by the Rev. Dr. Kirby in the 14th volume of the Linnæan Transactions (p. 571), the description, especially of the maxillæ and genæ, is however applicable to a very different group of African Cetoniidæ, typified by Cetonia elata, *Fabr.* Considerable confusion has, indeed, subsequently arisen in the employment of this generic name, which has been attributed to indolence, or even to a still worse principle*. The confusion, however, appears to me to have originated from a misapprehension of the note appended by Mr. Kirby to his generic description. After stating that the type of the genus was the Cetonia vitticollis, *Latr.* MS., he adds, "Regio, Africa. Cognate species, Cetonia africana, elegans," &c.; which would naturally lead to the opinion that the last-named species were regarded as congeneric with the type. That such, however, was not his view, is evident, not only from the *Indian* C. elegans being given as one of these cognate species, but also from the appendix to the Introduction to Entomology†; wherein the C. vitticollis is given under Gnathocera,

* In this, as in numerous other respects, Mr. Mac Leay charges Messrs. Gory and Perchéron with blindly following Dejean, whereas the first part of their monograph (which contained an entire synopsis of the genera and species) appeared in 1833, in which year only was commenced the 2nd Edition of Dejean's Catalogue. It is rather amusing to compare such a charge with the observation of Count Mannerheim upon the same authors (Observ. critiq. sur la Monog. des Cétoines), "Ils s'obstinent encore plus dans *leur principe* de ne *pas adopter les noms de Dejean.*" We are involuntarily reminded by these conflicting charges of the fable of the Old Man, his Son, and his Ass.

† The evident meaning of the word Gnathocera, as employed by Kirby, is an allusion to

and C. africana under a new genus Chlorocala, without any description. Messrs. Gory and Perchéron, however, injudiciously adopting a principle far too general, and which has led to almost irremediable confusion in entomological nomenclature—(namely, that they were at liberty to select any given species as the one to which the old generic name might be attached when the genus became dismembered), retained the C. africana as the type of Gnathocera, and gave the insects which are the true types of Gnathocera under a new generic name, Amphistoros.

Mr. MacLeay, in the Illustrations of the Zoology of South Africa, restored the name of Gnathocera to the latter of these two groups, whilst for the former he took up the name Coruphes, originally proposed for it by Gory and Perchéron, but which he has altered to Coryphe. Under this name it constitutes Mr. MacLeay's second subgenus of Cetoninus, intervening between the two other subgenera, Schizorhina and Goliathus. Of Schizorhina I have not hitherto treated, except by giving Mr. MacLeay's divisions of it, and describing some new species (ante, p. 103), but his divisions of Goliathus will be found ante, p. 6. Mr. MacLeay observes upon Coryphe, that it is extremely close to Goliathus, from which it may be known "by the maxillæ having the terminal process shorter, and in a line with the base, and by the mentum being more truncated; but, above all, by the horny part of their mandibles being much longer than the square membranous part. The males scarcely ever have any teeth on the external side of the anterior tibiæ, and when they possess such teeth, it is merely because they belong to aberrant species."—Illustr. Cet. So. Afr. p. 29.

The following are Mr. MacLeay's Sections of Coryphe :—

B. Mentum emarginate, ♀ with anterior tibiæ externally bidentate, rarely tridentate.	1. Naricinæ (of McL. but not of Dupont).	Maxilla having the inner process unidentate. Thorax not semicircular. ♂ Clypeus sometimes horned or bifurcate. India. Type, *Cetonia Mac Leaii*, K.
	2. Diceros, G. P.	Maxilla having the inner process unidentate. Thorax semicircular. ♂ Clypeus bifurcate. Indian Islands. Type, *C. bicornis*, Latr.
Asiatic Insects.	3. (Trigonophorus Hope, misnamed Rhomborhina by Mac Leay).	Maxilla having no tooth on the inner process. Thorax not semicircular. ♂ with clypeus generally horned. Asia. Type, *C. Hardwickii.*

the jaw-like horns of the head; and hence, in the "Introduction to Entomology," vol. iii. p. 488, he observed, "These horns have at first the aspect of a pair of open mandibles." This is in no wise applicable to C. africana, &c.

African Insects.	A. Mentum not emarginate.	4. Schuppelliæ, Mc L.	Maxilla with no tooth on the inner process. ♀ Tibiæ externally tridentate. Southern Africa. Type, *C. suturalis*, Fab. *
		5. Chlorocalæ, K.	Maxilla with its inner process unidentate. ♀ Anterior tibiæ without teeth. Tropical Africa. Type, *C. Iris*, Fab †.

As the first of these sections comprises the majority of the species illustrated in the plates of the present Number, it will be further necessary to add the subsections into which it is distributed by Mr. MacLeay.

1. *Cetonia elegans*, Fabr. Colour green. ♂ Clypeus with no horn.
2. *Cetonia Mac Leaii*, K. Colour green with black spots. ♂ Clypeus with a short vertical horn.

3. *Cetonia pretiosa*, Esch. Colour green with black spots. ♂ Clypeus with two lateral horns.
4. *Cetonia guttata*, Oliv. Colour green and red, with white spots. ♂ Clypeus with two lateral horns.
5. *Narycius olivaceus*, Dup. Colour green. ♂ Clypeus with two lateral horns.

On reviewing these arrangements of Mr. Mac Leay, and after studying the numerous dissections which I have given in my illustrations of these insects, it is impossible to arrive at any other conclusion than that Mr. Mac Leay's distinctions between Coryphe and Goliathus are of no intrinsic value, and that the distribution of the sections of Coryphe, and of the subsections of the first of its sections [Nariciæ Mc L.] require complete remodelling.

The attempt to separate the African from the Asiatic species of Coryphe must also be considered as unsuccessful. A comparison of the Indian C. elegans with the African C. africana and C. stigma; and of the Indian insect which has been termed Diceros Cuvera, with the African C. suturalis, will at once prove the unity of the group. The character relied upon by Mr. Mac Leay is, moreover, an erroneous one, since C. Iris, *Fab.* (see ante, pl. 19, fig. 2, and p. 107), possesses a mentum more deeply emarginate than any of the Asiatic species.

Again, with respect to the sub-sections of Mr. Mc Leay's first Asiatic section of Coryphe, it is to be observed, that C. Mac Leaii, *K.* and C. pretiosa, are identical; that C. guttata is an African insect, belonging to another section, and that N. olivaceus is the female of N. opalus, assigned, properly, by Mr. Mac Leay to another situation much nearer to the genuine Goliathi.

* This insect has the anterior ♀ tibiæ *bidentate*.
† This insect has the anterior ♀ tibiæ *tridentate*.

The species to which our attention is now directed are the most aberrant of the Goliathideous Cetoniidæ. They have lost the characters of the prothorax broadest across the middle, and the pluridentate and porrected upper maxillary lobe of Goliathus, Narycius, Cyphonocephalus, Mycteristes, and Phædimus; and the dilated prothorax and elongated fore legs with 3-dentate tibiæ of the males of Dicronocephalus. With this last, however, they agree in possessing a simple upper maxillary lobe.

The remaining groups of the Asiatic Goliathideous Cetoniidæ may be thus arranged.

Mesosterni processus brevis latus.
- Tibiæ anticæ ♂ intus serratæ, extus ♂ ♀ bidentatæ . . JUMNOS *.
- Tibiæ anticæ ♂ extus inermes . . . . . RHOMBORHINA.

Mesosterni processus elongatus angustus
- Pedes antici ♂ elongati
  - Clypeus in utroque sexu cornu obtriangulari armatus . . TRIGONOPHORUS.
  - Clypeus in utroque sexu quadratus . . . . . ANOMALOCERA.
- Pedes antici ♂ vix aut non longiores quam in ♀. Clypeus diversus HETERORHINA.
  - Tibiæ anticæ ♂ simplices . . *C. nigritarsis, Mac Leaii, læta, &c.*
  - Tibiæ anticæ ♂ sub-bidentatæ
    - a latiores . . . . . *C. elegans, &c.* †
    - b angustiores
      - * Clypeus integer ♂ ♀ . . . . *C. bimacula, &c.* ‡
      - ** Clypeus ♂ bicornutus . . . *Diceros bicornis, &c.*

As the toothing of the anterior tibiæ affords one of the most satisfactory characters for the discrimination of the group of Goliathideous Cetoniidæ, and as the different sections founded thereon, especially amongst the African species, have received generic names referring to the structure of the clypeus, I propose in this place to distinguish those species with bidentate tibiæ in the females, and with tibiæ either simple, or exhibiting a slight indication of bidentation in the males, and which, moreover, have generally an elongated mesosternal process, and the fore feet not materially unequal in size in the two sexes, under the name of

HETERORHINA, §

A name selected from the very variable structure and armature of the clypeus. If, indeed, this character were allowed to prevail

* There is no African group precisely analogous to this, in the form of the clypeus; Eudicella, however, represents it in respect to the internal serration of the fore tibiæ of the males.

† Represented in Africa by C. africana, stigma, &c.

‡ Represented in Africa by C. suturalis.

§ As this group is quite different in its construction from those of Gnathocera of Gory and Perchéron, or Coryphe of Mac Leay, I have applied a new name to it. Mr. Kirby's excellent name of Chlorocala would have been adopted had not the group been intended to comprise species which are neither green nor beautiful.

for the establishment of generic and sub-generic groups, nearly every species would form a different group. And yet there is no other character which will separate Diceros (or Dicheros, as Gory and Perchéron write the word) from the other Heterorhinæ.

In addition to the Asiatic species of this group subsequently noticed, the group comprises the African species C. Africana, *Drury*, C. stigma, *Pal. Beauv.*, and C. suturalis *, as well as C. smaragdina and chloris of Gory and Perchéron's Monograph; which last two species appear to be also African insects, judging, at least, from the specimens in Mr. Hope's collection, ticketed by M. Gory himself.

A rigid investigation of the species of this group, has shown the relative value of the different characters employed in their classification. The form of the head varies almost in every species; the maxillæ are sometimes terminated by a simple and sometimes a bifid lobe, this difference sometimes occurring in the same individual; and when simple, itvaries very considerably in form in the different species. The form of the mesosternal process is variable, but generally very much elongated and acute; in H. Hopei and Bengalensis it is, however, short and obtuse. There is considerable difference in the amount of emargination of the anterior margin of the mentum; the club of the antennæ is also slightly variable in size in the opposite sexes of some of the species. There is also considerable difference in the spur at the middle of the four posterior tibiæ; indeed, in some species it is quite obsolete. The apex of the elytra is sometimes rounded, and sometimes produced into two acute spines at the suture, and the unguiculi differ very much in size. The form of the body and the colouring of the species also differ materially. All these variations will, however, be more particularly noticed under each species.

Species I.—*Heterorhina nigritarsis.* (Plate 30, fig. 7, 7 a and b, and 8 a, b, c, d.) *Celonia n.* Hope, Syn. Col. Nep. in Gray's Zool. Misc. 1. 24. *Gnathocera n.* Gory and Perchéron, pl. 20, fig. 3.

This species has all the legs as well as the clava of the antennæ considerably elongated in the male, which is the only sex I have seen, so that I am uncertain whether a corresponding elongation exists in the opposite sex. The clypeus (fig. 8 *d*) is produced in front into a conical, somewhat recurved plate truncated in the front. The crown of the head is slightly keeled down the centre. The fore feet are quite simple, as are also the middle tibiæ, but the hind ones are slightly spurred below the middle. The abdomen in this sex is not channeled beneath. The mesosternal process is (fig. 7 *a* and 7*b*) rather long, pointed, and nearly straight. The mandibles (fig. 8 *a*) are rather small, with the horny blade rather longer than the square membranous part; the maxillæ (fig. 8 *b*) are considerably elongated, the inner lobe produced into a straight obtuse point, and the upper lobe large, and extending far beyond the front of

* I have not examined C. Feisthamel, viridi-cyanea, and monoceros.

the mentum (fig. 8 *c*), which is deeply emarginate. The femora are peculiarly coloured, being of a fine golden, fulvous, or opaline colour, with the inner edge of each shining green or blue.

The colour of the species varies very considerably, the upper surface varying from golden-green to blue, slightly tinged with green, with the elytra rich lilac-purple, with a dark suture. Such individuals (one of which is figured in plate 30, fig. 7, from the collection of F. Parry, Esq.), I believe, constitute the so-called species Cetonia mutabilis, Hope (Syn., Nep. Col. supr. cit.), but they are structurally identical with the type of the species, except that the conical front of the clypeus is not so regularly truncate.

Inhabits Nepaul and other parts of India.

Species II.—*Heterorhina Hopei* (Plate 33, fig. 3, and details).

Gnathocera Hope, Gory and Perchéron, Mon. Cét. pl. 20, f. 4.

This species has very much of the habit of the preceding, but differs from it in several important characters:—thus, the clypeus is entire and quadrate, with the lateral and front margin slightly elevated, and the crown of the head scarcely elevated in the middle. The antennæ have a club of moderate length. The fore tibiæ are simple, whence I conclude the specimens examined to be males, although the abdomen is not channeled beneath. The maxillæ (fig. 3 *a*) are rather short, with the inner lobe terminated by an acute, curved, horny point, and the upper lobe also curved and terminated by two sharp horny points; the mentum is rather deeply notched in the middle of the front margin. The mesosternal process is very short and obtuse (fig. 3 *b*, 3 *c*). The hind tibiæ are distinctly spurred below the middle, and the plantulæ and pseudonychiæ are very distinct.

The species varies very much in colour; some specimens in the collection of Nepalese insects presented to the Linnæan Society by General Hardwicke, being of a blue or purple tinge. The one now figured, from the collection of W. W. Saunders, Esq., is of an intense fiery copper, tinged according to the play of light with golden green.

Species III.—*Heterorhina dives*, Westw. (Plate 33, fig. 5 *a*, *b*, *c*, *d*, *e*, *f*.)

Gnathocera Mac Leay, Gory and Perchéron, Mon. Cét. pl. 19, fig. 2 (nec. Cet. Mac Leaii, Kirby).

Coryphe pretiosa, Mac Leay Cet. So. Afr. p. 29 (nec Cetonia pretiosa Esch.).

The only specimen I have seen of this magnificent insect was in the museum of the Jardin des Plantes, where I found it arranged with the true Cet. Mac Leaii, with which it has also been confounded by Gory and Perchéron, whilst Mr. Mac Leay (from confiding in their Monographie) has mistaken it for the C. pretiosa of Eschscholtz. As it is from this specimen that my figures were drawn, I did not venture to extract the trophi. The head of the male has the sides produced into two long porrected, nearly straight horns, the tips being incurved (fig. 5 *a*, head from above, 5 *b*, the same from the front, 5 *c*, the same sideways); the front of the clypeus is deflexed and broad (5 *b*); the crown of the head is furnished with a very broad, short plate; the mesosternal process is long, narrowed, rather obtuse at the tip, which is slightly bent upwards (fig. 5 *e* and 5 *f*); the fore tibiæ (5 *d*) are short and toothless, the hind ones have the rudiment of a spur below the middle; the pseudonychiæ are scarcely distinct, and the elytra have the tips strongly spined at the suture. As this species is well figured in the Monographie des Cétoines, I have not thought it necessary to refigure it.

Species IV.—*Heterorhina Mac Leaii* (plate 33, fig. 4, and details).

Cetonia Mac Leaii, Kirby in Trans. Linn. Soc., vol. 12, p. 408, pl. 21, fig. 11 (nec. Gory and Perch).

Cetoninus (Coryphe Naricia § 2*) Mac Leaii*, Mac Leay, Cet. So. Afr.

Cetonia pretiosa, Esch. Entom. p. 23, No. 9, 1822 (nec. Coryphe pretiosa, Leay).

It is at once evident, from Eschscholtz's character "capite spina incumbenti, clypeo reflexo bidentato," given of his C. pretiosa, that it is identical with Mr. Kirby's insect. This lovely species has been recently brought from the Philippine Islands, by Mr. Cuming, in considerable numbers; as it is not, however, figured in Gory and Perchéron's Monograph, I have introduced it in the present work, and proceed to point out the characters of the sexes. The male has the clypeus more strongly bifid in front than the female, and the flattened horn on the crown of the head in the former sex is much more acute than in the female, which has it obtusely rounded, or but slightly pointed (4 *a*, 4 *b*, head of male, 4 *f*, head of female.) The mandibles

have the horny blade more than one-third longer than the square membranous part; the maxilla of the male has the inner lobe pointed at the tip (fig. 4 *c*), and the upper lobe horny, entire, and not very acutely pointed at the tip; but in the female (4 *g*) the upper lobe is acutely bifid at the tip; the mentum is deeply cleft in the centre of the anterior margin. The mesosternal process is rather long, flat, and not very acute at the tip (fig. 4 *d* and 4 *e*); the abdomen of the male is deeply channeled down the middle beneath; the elytra of the males are terminated by two strong spines at the suture. The fore tibiæ in the males are simple, but bidentate in the female (fig. 4 *h*); the intermediate tibiæ are also simple in the male, but slightly spurred beyond the middle in the female, whilst the hind tibiæ are spurred in that situation in both sexes. The pseudonychiæ are scarcely distinct. Some specimens have two small black spots on the pronotum in lieu of the large one, and the black spot near the base of the elytra almost divided in two by a longitudinal patch of green.

Species V.—*Heterorhina decora* (Plate 33, fig. 6).

Cetonia decora, Illiger. Vers. Oliv. Ent. 2, p. 148; Schon. Syn. 1, 3, pag. 133.

Cetonia 6-*maculata*, Fabricius Syst. El. 2, p. 149; Gory and Percheron Mon. Cét. pl. 19, fig. 3.

Cetonia maculata, Gory and Percheron op. cit. in text.

This is another species closely allied to the preceding in the disposition of its colours, but which differs from both materially in the structure of the clypeus. In both sexes the anterior angles of the head are rounded off, the middle being produced into a cone truncated, or rather, slightly emarginate at the tip (fig. 6 *a*). The crown of the head has a short flat horn, which is truncated in the male, but rather conical at the tip in the females. The maxilla in the female (fig. 6 *b*) has the lower lobe terminated by a curved spine, whilst the upper lobe is curved and acutely bifid at the tip; the mesosternal process is long, narrow, obtuse, and rather bent upwards at the tip (fig. 6 *c* and 6 *d*); the elytra are spined at the tips, especially in the males. The fore tibiæ of the males are entire, but bidentate in the females; the lower tooth minute. The hind tibiæ are slightly spurred below the middle. The tarsi in the female are short and broad. The spottings vary very considerably in size, being sometimes very small, as in a specimen in the collection of the Rev. F. W. Hope, in which those on the pronotum and near the suture are almost obsolete; and sometimes almost as large as in H. Mac Leaii, as in the magnificent specimen represented in the plate, collected in Java by Dr. Horsfield, and contained in the Museum of the East India House.

Species VI.—*Heterorhina amœna* (Plate 34, fig. 4, and details).

Coryphe amœna, Hope in Trans. Ent. Soc., Vol. 3, p. 64.

This small Assamese species has the sides of the head rounded in both sexes; the middle of the front margin of the clypeus being rather deeply notched (fig. 4 *a* 4 *b*), the upper surface of the head is strongly carinated, the carina terminating in a conical point in both sexes; the mandibles have the horny blade long (fig. 4 *c*), the maxillæ of both sexes (fig. 4 *d*) have both the lobes rather oblong at the tip. The mentum is cordate-truncate, with the anterior margin deeply notched (fig. 4 *e*); the fore tibiæ of the male are simple, but slightly bidentate in the female (fig. 4 *h*), the mesosternal process is elongate, narrowed, not very acute at the tip, which is rather bent upwards (fig. 4 *f* 4 *g*), the hind tibiæ are not spurred beyond the middle. The male has the abdomen channeled down the middle beneath.

Species VII.—*Heterorhina punctatissima*, Westw. (Plate 34, fig. 5, and details).

Coryphe jucunda, Hope in Trans. Ent. Soc., vol. 3, p. 64, nec. Germar in Allg. Liter. Zeit., Aug. 1837.

This new species is about the size of H. decora, it is of a remarkably rich dark-green colour and very much punctured. The middle of the anterior margin of the clypeus is slightly produced and reflexed in both sexes (fig. 5 *a b* ♂, fig. 5 *a* ♀). In the male the crown of the head is bounded in front by a broad curved horn, rising but very little above the surface of the head (5 *a*), in the female, however, (5 *c*), this is much more developed, and the crown is moreover strongly keeled between the eyes, the keel terminating in a conical point. The maxillæ have the lower lobe terminating in a point (5 *d* ♂), which is rather stronger in the female than in the male, and the upper lobe is acutely bifid, the lower tooth being the largest; the mentum is elongated, rather narrowed towards the base, and with the front margin deeply notched in the middle; the mesosternal process is moderately long and rounded at the tip, which is scarcely turned upwards (fig. 5 *f* 5 *g*). The fore tibiæ of the males are entire but

deeply bidentate in the ♀ (fig. 5 *e*); the four hind tibiæ are toothed below the middle. The abdomen is not channeled beneath in the middle in the males. The pseudonychiæ are long.

I have seen specimens of this species in the collections of Messrs. Hope, Solly (from Assam), Parry (from Sylhet), the Entomological Society of London (received from Mr. Mc Clelland), and the East India House.

Species VIII. — *Heterorhina tibialis*, Westw., n. sp. (Pl. 34, fig. 6 and details.)

H. oblonga, viridis, rugosula, tibiis rufis; clypeo ♂ subsimplici, ♀ transverse carinato. Long. corp. lin. 10½. Inhabits East Indies, Assam? Mus. Soc. Merc. Ind. Or. et nostr.

This new species is most nearly related to the preceding, but it is considerably smaller, narrower, and more regularly oblong. The green colour is of a much darker tint on the upper surface of the body, which is very much punctured, the punctures, however, being not so well defined as in the preceding, whence the elytra have a more ruguloso appearance, except down each side of the suture and along two striæ (bordered by deeper punctures), down the disc of each elytra. The under side of the body is more shining green, with a coppery tinge, the thoracic portion being deeply punctured. The exposed part of the metacoxæ and the two posterior tibiæ are red, the tarsi black, and the femora concolorous with the body. The head of the male (fig. 6 *a*, 6 *b*) is nearly square along the front margin, which is slightly reflexed, and there is a slightly defined, curved line, running between the base of the antennæ, its middle touching a scarcely more raised, central, small tubercle—the head of the female, on the other hand, has the middle of the front margin elevated into a small, upright, conical lobe (not visible looking downward); the ridge above-mentioned is greatly elevated, and there is also a slightly raised tubercle behind. The maxillæ have the lower lobe terminated by an obtuse point, scarcely stronger in the female than in the male; but the upper lobe is strongly and acutely bifid in both sexes (fig. 6 *d*). The mentum is strongly notched in the middle of the front margin. The fore tibiæ of the male are simple, but in the female they are broad and obtusely bidentate (fig. 6 *e*); the two hind tibiæ in the male and the middle and hind ones in the female are spurred below the middle. The mesosternal process is porrected, rounded, and slightly bent upwards at the tip (fig. 6 *f* and 6 *g*). The abdomen of the male is not channeled beneath, and the club of the antennæ is of equal length in both sexes.

Species IX. — *Heterorhina glaberrima*, Westw. n. sp. (Plate 34, fig. 1, and details.)

H. nigra nitidissima, thorace et elytris impunctatis, castaneo, glauco, vel viridi-tincta, clypeo integro subquadrato in utroque sexu simplice, metasterno canaliculato. Long. corp. lin. 11¼.

Habitat in India Orientali. In Mus. Soc. Merc. Ind. Or. et D. Parry.

This very distinct species possesses many of the characters both of Rhomborhina and Anomalocera, but differs in habit materially from both, having also a much more elongated mesosternal process than the former, and the clava of the antennæ of the males much shorter than in the latter. The general form is more regularly oblong than in the majority of the species; the head is entire, with the front part subquadrate, being rather narrower at the base of the antennæ in the female than in the male; the lateral and front margins are reflexed, the latter being slightly curved instead of straight; the disc of the head is nearly flat and punctured. The club of the antennæ in the male is evidently longer than in the female; the lower lobe of the maxillæ of the male (fig. 1 *a*) is not so acutely hooked at the tip as in the female (fig. 1 *b*); the mentum is deeply notched in front; the fore tibiæ in the males are simple, but strongly bidentate in the females (fig. 1 *e*); the mesosternal process is elongated, not acutely pointed at the tip, which is bent upwards (fig. 1 *c* 1 *d*); the elytra are somewhat acuminated at the tips. The metasternum in the males is deeply channeled longitudinally, and there is an impression in the middle of the basal joint of the abdomen; the metasternal impression is less strong in the female than in the male, and the basal joint of the abdomen is not impressed. The four hind tibiæ in the males are simple, but slightly spurred beyond the middle in the female. The pronotum and elytra are exceedingly glossy and impunctate, except the front of the former and the extremity of the latter. The colour is dark, but variable from a rich chestnut colour to green or bluish purple, having in some shades a strong tinge of rich red brown, which it is impossible correctly to represent by colours. The podex is rugose, and clothed with fulvous hairs. The underside of the body and legs also varies in colour according to the upper side.

This species serves well to show the gradual approximation of forms in a complete series of the species of a natural group; it is only because we find other species in the present genus with an entire quadrate clypeus, such as H. læta, Hopei, &c., that I have retained this

species in the genus now under description. In its peculiar habit it most approaches Rhomborhina apicalis, but in that species the clava of the antennæ is of precisely equal length in both sexes, whereas in Rh. cyanipes it is rather larger in the male than in the female.

Species X.—*Heterorhina lata* (Plate 34, fig. 2 *a*—*i*).

Cetonia lata, Fabr. Syst. El. 2, p. 150.

Cetonia pyropus, Herbst. Col. 3, p. 258, pl. 32, f. 6. Voet. Col. ed. Panz. 1, pl. 4, f. 27.

This beautiful species has the clypeus entire in both sexes, and slightly reflexed (fig. 2 *a*). The mandibles have the horny part acute, and about one third longer than the square portion (fig. 2 *b*). The maxillæ have both lobes curved and acute (fig. 2 *c*); they are alike in both sexes. The mentum has a deep but rather narrow notch in the middle of the front margin (fig. 2 *d*). The club of the antennæ of the males is not longer than that of the females; the abdomen of the males is not channeled beneath. The mesosternal process (fig. 2 *e* 2 *f*) is elongate-conic, and rather obtuse at the tip, which is bent upwards toward the body; the fore tibiæ in the males (fig. 2 *g*) are entire, but broad and bidentate in the females (fig. 2 *i*); the four hind tibiæ are furnished below the middle with very slight rudiments of a spur; the two posterior in the males are curved towards the base (fig. 2 *h*). The female has the elytra broader behind than the male. The species is not only a native of Java, but Mr. Parry has received it from Sylhet, and there is a female specimen in the Museum of the Jardin des Plantes labelled Gnathocera australis, received from M. Gory as a native of New Holland, which I cannot distinguish specifically from the true types of the species.

Species XI.—*Heterorhina Bengalensis* (Plate 35, fig. 1, and details).

Cetonia bengalensis, Hope, Syn. Nep. Col., in Zool. Misc. p. 24.

Gnathocera melanaria, Gory and Perchéron, Mon. Cét. pl. 22, fig. 5 (variety).

Gnathocera pyroscelis, Hope MSS. (variety).

All the specimens of this species which I have seen are females, and differ in no structural respect from each other, the varieties consisting in the more or less pitchy red or black elytra, and the colour of the tibiæ, some having them all black, others with the four, and some with only the two hind ones fulvous red. The front of the clypeus is conical and notched in the middle, with a strong dorsal carina terminating in an obtuse point (fig. 1 *a* and 1 *b*); the mandibles have the horny blade rather broad in the middle, and at least one third longer than the square portion (fig. 1 *c*); the maxillæ have the lower lobe curved and strongly hooked, and the upper lobe is strongly curved and acutely bifid (fig. 1 *d*); the mentum has the front margin nearly straight, a very minute notch only being visible in the middle of the fore margin (fig. 1 *e*); the mesosternal process is very short and obtuse (fig. 1 *f* and 1 *g*); and the anterior tibiæ broad and strongly bidentate; and the four hind ones spurred below the middle.

Species XII.—*Heterorhina jucunda*.

Gnathocera jucunda, Germar in Allg. Lit. Zeit. Aug. 1837 (nec. Cor. jucunda, Hope in Trans. Ent. Soc. 3, p. 64).

Gnathocera smaragdina, Gory and Perchéron, Mon. Cét., pl. 20, fig. 1, nec smaragdina, Voet and Herbst, which = H. africana.

Messrs. Gory and Perchéron give China as the locality of this species. It has, however, much more the habit of an African insect, judging from the male specimen in Mr. Hope's collection. The head is nearly quadrate in front, the anterior margin of the clypeus being only slightly produced into an elevated lobe; the back of the head is strongly carinated, the carina terminating in an elevated semicircular lobe; the maxillæ have the inner lobe acute, curved, and horny, and the upper lobe obtusely and obliquely truncate, and not so long as the lower tooth; the mentum has a small, but distinct, notch in the middle of the front margin; the mesosternal process is elongate-conical, and bent upwards at the tip; the abdomen is not channeled beneath; the anterior tibiæ are narrow and nearly simple, the apex on the outside being slightly oblique-truncate, so as to give the appearance of an indication of bidentation; the four posterior tibiæ are simple; the tarsi are rather elongate and narrow, with the pseudonychiæ obsolete. I should conceive from these characters that this specimen is a male, and that it, as well as H. chloris, Hope (Gory and Perch., pl. 20, fig. 5), to which it is closely related, are African insects.

Species XIII.—*Heterorhina elegans* (Pl. 35, fig. 2, 3, 4, 5, and 6, with the details).

Cetonia elegans, Fabricius, Olivier (nec Gory and Percheron, pl. 20, fig. 2, from Oware, = C. stigma Pal. B.)

Cetonia cuprea, Herbst, col. iii., tab. 29, fig. 5.

Gnathocera micans, Guérin. Rév. Zool., 1840, p. 80 (variety).

Coryphe cyanoptera, Hope MSS. (variety).

This is a very variable and brilliant insect, the variations consisting not only in difference of size, colours, and markings, but also in punctation, and even in form and structure, no two specimens being exactly alike; some being very much smaller and narrower than others of the same size; thus some males are very narrow, and others short and broad. The front of the head is more or less produced in the middle of the clypeus, the produced part being reflexed and generally slightly bifid; the crown of the head is carinated, the carina terminating in both sexes in a transverse tubercle; this, however, is sometimes almost, and even entirely, obsolete. The maxillæ have the inner lobe more or less acutely toothed, and the upper lobe, as in the last species, obliquely truncate at the tip; the mentum is deeply emarginate in front; the mesosternal process is moderately elongated and obtuse (fig. 4*a*, 4*b*); the abdomen of the male is deeply channeled down the middle beneath; the anterior tibiæ of the males are slightly sub-bidentate, the apex being very acute, and the females broad and acutely bidentate. The four hind tibiæ differ in the size of the central spurs, which are sometimes obsolete; the hind pair also differs in the size and colour of the brush of hairs at its extremity on the inside. The pseudonychiæ are very minute. Individuals differ also very much in the punctation of the elytra, the punctures being sometimes nearly as strong as in the males of H. lata, and sometimes almost obsolete. Almost every shade of green is exhibited by different specimens, and others are of a rich golden, and some of an intense purple-blue. The colour of the exposed part of the posterior coxæ varies from black and green to fulvous red; the tibiæ also vary from cyaneous to green and castaneous. The black spots at the shoulders and tips of the elytra are also variable.

My figure 2 represents the Gnathocera micans of Guérin, which I cannot but consider as a male variety of this species, differing in having the front projection of the clypeus entire at the tip (fig. 2*a*); the tubercle at the extremity of the carina is dilated at the tip; body rather narrow; the elytra without any humeral or apical black patches; the exposed part of the metacoxæ concolorous; the fascicle of hairs on the hind tibiæ dark brown; and the punctures of the elytra distinct. Fig. 2*b* represents the maxilla, and 2*c* the fore tibiæ of this individual. I am indebted to M. Guérin Meneville for sending me his typical specimen of this insect from Paris. It is from the Neilgherries.

My figure 3 represents the smallest and narrowest male which I have seen, contained in the collection of F. Parry, Esq. The front of the clypeus has the projection so slightly bifid as to appear at first sight entire. The carina is very slight, and terminates in an impression without any raised tubercle (fig. 3*a*); the elytra are very strongly punctured, and without any black humeral or apical spots; the exposed part of the metacoxæ red. The femora have a fulvous tint, and the tibiæ are castaneous, with a green tinge; the hairs on the hind tibiæ are fulvous, the hind feet having the brush scarcely distinct.

My figure 4 represents another variety of the male, of very broad form, having the upper surface of an intense cyaneous purple, and the exposed part of the metacoxæ red; the legs are black, and the hairs on the hind tibiæ dark brown. Fig. 4*a* and 4*b* represent the mesosternal process, and 4*c* the front of the head of this specimen, which is in the collection of the Rev. F. W. Hope.

My fig. 5 represents the front of the head of another specimen, in the collection of F. Parry, Esq., of a similar broad form to figure 4, but without any horn at the extremity of the carina, which is terminated by a transverse depression. This specimen is a male, of a rich green colour, with small humeral and apical black spots, and the metacoxæ concolorous. Figure 6 *a* represents the front of the head of an ordinary female, 6 *b* the maxilla of the same, and 6 *d* the anterior tibiæ.

A small female of this species, collected by Colonel Hearsey in Central India, of a rich golden colour tinged with green, with the exposed part of the metacoxæ black, has the disc of the elytra much more arched than ordinary, with a slightly elevated ridge extending from the inside of the apical black patch half up the elytra, parallel with the suture.

The original specimens, described by Fabricius, are preserved in the Banksian Collection at the Linnæan Society; one is green, the other golden green, both having the exposed part of the metacoxæ red, without any humeral black spot, and the apical ones dark green instead of black; both are males, with brown tufts of hair at the extremity of the posterior tibiæ.

As Mr. Mac Leay describes the clypeus of Cetonia elegans, Fab., as having no horn in the male, it is probable that he mistook the species.

Species XIV.—*Heterorhina olivacea* (plate 35, fig. 7, and details).
Gnathocera olivacea, Guérin, in Rév. Zool. 1840, p. 80.
Gnathocera Surrya, Hope MS.

This species scarcely differs from the preceding in its structural details. All the specimens, however, which I have seen, agree in their deep olivaceous colour, and in the thick tuft of hairs at the tip of the hind tibiæ. The elytra are also more attenuated behind than in any individuals of H. elegans which I have seen. The exposed part of the metacoxæ is of a dark red-brown colour. The head is alike in both sexes (fig. 7 *a*, 7 *b*); the maxillæ have the lower lobe horny, curved, and acute, in both sexes (fig. 7*c*); and the upper lobe is broad, short, and obliquely truncate, so as almost to appear bidentate. This form occurs both in males and females; but I have found the upper lobe much narrower and entire in some specimens. The abdomen of the male has only the two basal segments longitudinally channeled beneath; the mesosternal process is long and curved upwards at the tip.

Species XV.—*Heterorhina bimacula*, Wied. Zool. Mag. Band. 2, st. 1, p. 85.
Coryphe Wiedemanni, Mac Leay, Cet. So. Afr. p. 30.

This species comes very close to the following, with which it is regarded as identical by Messrs. Gory and Perchéron; but, as Wiedemann expressly says of the yellow marking on each elytron, that it "ein wenig vor der Mitte steht;" and that it "am vorder-und hinterrande ein wenig zackig ist;" and, moreover, describes the pygidium as being "ein wenig röthlich," I consider his description as inapplicable to the following. He gives Bengal as the habitat of his insect, which he says is 7 to $7\frac{3}{4}$ lines long.

Species XVI.—*Heterorhina confusa*, Westw., (plate 36, fig. 2, and details.)
Gnathocera bimaculata, Gory and Perchéron, Mon. Cét. pl. 22, fig. 3 (excl. Syn. Wied.)

Gory and Perchéron give Java as the habitat of this insect, figured by them from the collection of Dejean. The only specimens I have seen were collected in Central India by Colonel Hearsey. The front of the head (fig 2 *a*) is subquadrate and entire in both sexes, with an elevated margin; along its middle runs a slightly elevated space, dilated in front; both the maxillæ have the upper lobe bifid in the male; but in the female one of them is entire and rather obtusely pointed, whilst the other is obliquely truncate (fig. 2 *b*, 2 *c*); the mesosternal process is porrected and bent towards the body; the anterior tibiæ of the males (fig. 2 *e*) are sub-bidentate at the tip, but more acutely so and broader in the female (fig. 2 *f*); the yellow patch on each elytron occupies the middle, terminating at about one third of the length of the elytron from the extremity; the terminal segment of the body, both above and beneath, is bright fulvous red. The abdomen of the male is channeled longitudinally on the under side.

Species XVII.—*Heterorhina Cuvera* (Plate 36, fig. 1 and details).
Dicheros Cuvera, Hope, MSS., Newman, Ent. Mag. 5, 384.

This species varies from 6 to 8 lines long; it is closely allied to the preceding species, but differs in its narrower form as well as in the much greater extent of the spots on the elytra. The front of the head (fig. 1 *a*) is similar in its construction to that of H. confusa. The maxillæ (fig. 1 *b*) have the lower lobe curved and acute in both sexes. In a male dissected I found the upper lobe of one maxilla acute and entire, whilst in the other maxilla it was bifid (fig. 1 *c*), whilst in the female both maxillæ have the upper lobe bifid. The mentum (fig. 1 *d*) is oblong, with the front margin emarginate; the mesosternal process is elongate, rather obtuse at the tip, which is bent upwards (fig. 1 *e*); the abdomen of the male is deeply channeled beneath; the male has the fore tibiæ sub-bidentate at the tip (fig. 1 *g*), whilst in the female they are broader and more acutely and distinctly bidentate (fig. 1 *h*), The hind tibiæ are simple in both sexes. I have seen many specimens in which the yellow patch is discoloured, and has assumed a dark brownish red colour. It is from Bombay.

Species XVIII.—*Heterorhina Childrenii* (Plate 36, fig. 3 and details). H. nigra nitida, clypeo tuberculo elevato instructo; pronoto rufo-plagiato; elytrisque macula magna flava; scutelloque rufo. Long. corp. lin. 7, lat. ad basin elytr. fere lin. 3.

The only specimen I have seen of this species is in the collection of the British Museum, where it has long stood undescribed, having the name attached to it which I have adopted

above. It is an interesting species, differing in the form of its clypeus from any of the other similarly coloured species. Its general habit is similar to that of H. confusa, except that it is much more attenuated behind. The front of the head is slightly produced and elevated in the middle, and the centre of the disc is elevated into a small tubercle, rounded in front (fig. 3 *a* 3 *b*), with various curved impressed strigæ. The fore tibiæ are narrow and sub-bidentate (fig. 3 *d*), and the mesosternal process is porrected and bent upwards at the tip (fig. 3 *c*). It is shining black, with the sides of the pronotum red, dilated towards the hind angles into a large patch on each side; the scutellum is red, the podex dirty red; the exposed parts of the metacoxæ and the deflexed sides of the pronotum red; the terminal ventral segment and the sides of the preceding joint are also red; the large yellow patch on each elytron terminates about one third from their extremity. It inhabits Bengal, and was received by the British Museum with the remainder of the Hardwicke bequest.

Species XIX.—*Heterorhina bicornis* (Plate 36, fig. 8 *a*—8 *h*, and details).

Cétoine à deux cornes, Latr. in Règne An. pl. 17, fig. 4 ♂; plate 18, fig. 5 ♀.

Dicheros plagiatus, Klug MSS.; Gory and Perchéron Mon. Cét. pl. 58, fig. 3.

It will be seen on referring to Mr. MacLeay's distribution of the sections of his group Coryphe, that he adopted Gory and Perchéron's Dicheros (which he correctly alters to Diceros), as one of them; observing, however "that, except a slight difference in the form of the thorax and the colour, we find little to distinguish the group from the section Naricie. The organs of the mouth are the same in both." Had Mr. MacLeay been acquainted with the insects figured in the upper part of my plate 36, there can be no doubt that he would have seen the impropriety of retaining Diceros in the station he has assigned it. It is true that we now know several species which agree in the peculiar armature of the head of the two sexes; but this character has I think, been satisfactorily shown to be but of trivial value. Compare on the other hand, for example, the two insects represented in figures 2 and 7 of this plate, and it will be evident that the general relations of the two species are far too close to allow them to be separated in consequence of the difference in the structure of the horns of the head—a character which, if employed, would necessitate the establishment of almost as many groups as there are species in the genus.

The male has the sides of the head in front of the eyes produced into two long porrected horns directed slightly upwards (fig. 8 *a*, 8 *b*), the space between them at the base being deeply excavated into a semicircular hollow, the crown of the head not being furnished with any horn, plate, or tubercle; the female, on the other hand, has the front of the head conical, reflexed, and terminated by two small teeth, the space between which and the crown of the head is deeply excavated, a short, flattened, conical horn overhanging the excavation (fig. 8 *c*, 8 *d*). The maxillæ in both sexes are alike, having both the lobes acute, curved, pointed, and entire (fig. 8 *e*); the mentum is rather broad, with the front margin emarginate (fig. 8 *f*). The prothorax is broader in proportion than in the preceding species similarly coloured, and its sides are rather more rounded; we still, however, perceive the slight angle in the middle of each side; the elytra are more attenuated behind, especially in the female; the tips are slightly, but not pointedly, produced in either sex. The fore tibiæ are narrow, and very slightly sub-bidentate at the tip in the males (fig. 8 *g*), but in the female they are rather broader, with the tip more distinctly bidentate (fig. 8 *h*). The mesosternal process is elongate and bent upwards at the tip. The abdomen of the male is deeply impressed down the middle on the underside; the four hind tibiæ are simple. This species is a native of Timor.

Species XX.—*Heterorhina ornata* (Plate 36, figs. 6 and 7, and details).

Dicheros ornatus, Burm. MSS.; Hope in Proceed. Ent. Soc., July 1841, p. 33.

The female of this species closely agrees with that of the preceding, but it is of a narrower form; the head is similar (fig. 7 *a* 7 *b*), the middle of the crown being furnished with a short, flattened, conical horn; it has, however, been described "capite medio excavato postice tridentato;" the latter character having originated by regarding the raised and slightly angulated lateral margins of the head, in front of the eyes, at the base of the antennæ, as horns. The yellow spots on the elytra commence nearer the base than the extremity of the scutellum, and terminate at one-third of their length from the tip. The terminal segment of the body, both above and beneath, as well as the preceding ventral joint, are of a dark-red colour; the maxillæ are similar to those of the male of the preceding species. The fore tibiæ are bidentate (fig. 7 *c*), and the four hind tibiæ are simple. The mesosternal process (fig. 7*c*, 7 *d*) is porrected, and bent upwards at the tip.

Mr. Hope's unique specimen is from Mysore in the East Indies.

I refer to this species, a male insect, brought by Mr. Cuming from the Philippine Islands,

in the collections of the British Museum and Mr. Waterhouse, represented in fig. 6 with its details. The horns of the front of the head in this insect are even longer than in H. bicornis, the extremities being compressed; the general colouring agrees with H. ornata ♀, as does also the size and shape of the yellow patches on the elytra: the femora, as in that species, are blood-red at the base, with the tips black, and the prothorax beneath is blood-red. It is represented of the natural size.

Species XXI.—*Heterorhina biguttata*, Westw. (Plate 36, fig. 5, and details). H. nigra, nitida, pronoto utrinque plaga sanguinea, elytrisque maculis duabus minoribus fere rotundatis mediis fulvis. ♀ Long. Corp. lin. 8½.
Habitat in Insulis Philippinensium. D. Cuming. In Mus. Britann.

The only individual I have seen of this species is a female, in the collection of the British Museum, brought from the Philippine Islands by Mr. Cuming. It closely agrees in its general character with the female of H. ornata, but has the elytra more attenuated behind, and the conical front of the head is rounded off, and but slightly bifid. The horn on the crown of the head is broader in front; the sanguineous patches on the pronotum are wider apart, and the yellow spots on the elytra are of a dark fulvous-yellow, and occupy only a small portion of the middle of each side of the elytra, each having its margin towards the suture almost regularly rounded. The femora and terminal segment of the abdomen are coloured as in the preceding species, but the prosternum is not red at the sides.

Species XXII.—*Heterorhina decora.*
Dicheros decorus, Gory and Perchéron Monogr. Cét. Plate 58, fig. 4.

Inhabits Java. The head is described by Messieurs Gory and Perchéron as "courte, concave, robordée, bidentée antérieurement, *carénée sur le vertex.*" I regret that owing to the indisposition of M. Gory, I was unable to examine this species in his cabinet, during my recent visit to Paris. I am unable, therefore, to speak with precision as to its specific distinction from the following species.

Species.—XXIII.—*Heterorhina Petelii* (Plate 36, fig. 4, and details).
Gnathocera Petelii, Buquet in Ann. Soc. Ent. France, 1836, p. 206.

The head of the female of this species (now first delineated from the collection of M. Buquet) is similar in its structure to that of the female of H. bicornis, having a short flattened horn between the eyes, extending over the deep impression of the clypeus, which is slightly elevated and but slightly emarginate in front. This sex only is described by M. Buquet, nor does he appear to be aware that it is the female, and that from analogy the male must be similar in the form of the head to C. bicornis. It is broader in its outline than the other species I have examined. M. Buquet describes the *dessous du corps* as red. The underside of the body is, however, black, the three apical segments of the abdomen alone being blood-red, which is also the colour of the deflexed sides of the pronotum, scutellum, and pygidium. The mesosternal process is represented in figures 4 *a* and 4 *b*; the tip being bent upwards.

The plants represented in these plates are as follows:—
Plate 33. Cypripedium purpuratum, Lindl. Bot. Reg. pl. 1991. A native of the Malayan Archipelago.
Plate 34. Pontederia vaginalis, Roxburgh's Plants of Coromandel, 2, pl. 110.
Plate 35. Cypripedium barbatum, Lindl. Bot. Reg. 1842, pl. 17; brought from Mount Tophir, in the Straits of Malacca, by Mr. Cuming; and
Plate 36. Dolichos lignosus, Linn. An Indian legume, the seed-vessels of which are a common food throughout India, eaten as our French or kidney-beans are, to which, however, according to Rumphius, they are far inferior.

Note.—The Gnathocera dorsalis of Gory and Perchéron is the only species of the group treated upon in the previous pages hitherto described as a native of New Holland. The tribe is however confined to the tropical portions of the Old World; for the insect in question belongs to Mr. Kirby's genus Macroma, and instead of being the dorsalis of Kirby, as quoted by the French monographers, it is his Macroma scutellata; the M. concolor of the Kirby Cabinet (now in the possession of the Entomological Society) being a dark variety of the same species. The true dorsalis of Kirby is a large species of Schizorhina.

THE SUMMER'S CALL.

This brilliant summer weather and a vacant page tempt me to introduce some pleasant lines, by that sweet poetess, the late lamented Mrs. Hemans.

Come away! the sunny hours
Woo us far to founts and bowers;
O'er the very waters now,
In their play,
Flowers are shedding beauty's glow:
Come away!
Where the lily's tender gleam
Quivers on the glancing stream—
Come away!

All the air is filled with sound
Soft and sultry and profound;
Murmurs through the shadowy grass
Lightly stray;
Faint winds whisper as they pass—
Come away!
Where the bee's deep music swells
From the trembling foxglove bells,
Come away!

In the deep heart of the rose
Now the crimson love-hue glows;
Now the glow-worm's lamp by night
Sheds a ray
Dreamy, starry, greenly bright—
Come away!
Where the fairy cup-moss lies
With the wild-wood strawberries,
Come away!

ENTOMOLOGICAL INTELLIGENCE, &c.

(No. IX.)

MR. DOUBLEDAY'S NOTES ON THE HABITS OF THE NORTH AMERICAN SPECIES OF PAPILIO CONCLUDED.

Papilio Turnus is very widely spread, and seems to vary much from the effects of climate. The extreme northern ones (as Newfoundland specimens) are paler, (sometimes, Mr. Gosse tells me, with the ground nearly white,) and have the bands less clearly defined; the black being a good deal *suffused* (especially in the ♀) over the yellow. The southern species generally expand from ½ to 1 inch more than the northern ones, and have the colours brighter, the black being more velvety and better defined.

I found Turnus common at Trenton Falls, N. Y., in June, frequenting the lilacs in the gardens, and then easily captured; indeed I have often taken them off the flowers with my fingers. When flying its appearance is beautiful, from its sailing along with its wings expanded. Then it is hard to take. In Ohio it is common, and not rare anywhere in the southern states; being found alike in the low country near the sea and on the loftiest of the wooded Alleghanies (say 3000 to 4000 feet elevation). It frequents in the south, Cnicus horridulus, Anona grandiflora, Cephalanthus occidentalis, &c. In crossing the mountains of N. Carolina and Tennessee we saw in plenty in the wet patches of the roads, by the sides of the numerous water-courses, &c. for it loves to sit in the mud, and in Ohio, where the roads are none of the best, it was equally abundant.

P. Glaucus is very rare in general, and almost confined to the southern states. I never saw it but two or three times. It sometimes, in early spring, comes to the plane-tree blossoms, but is mostly seen soaring over the high underwood. Its flight is very rapid. R. Foster took it in Ohio. I have specimens taken in Delaware (its northern limit!), and it occurred occasionally in E. Florida.

P. Troilus in its habits resembles Philenor. I have often seen

them in company on the flowers of Cep. occidentalis, Anona grandiflora, &c., and on the muddy roads. Its flight is more powerful than that of Philenor. About equally diffused throughout the Union.

P. Thoas. This certainly is not the same as the Brazilian species. I have a specimen from Mexico exactly like the N. American ones. This is Cramer's Cresphontes. It is a rare and quite southern species. I took but three or four in Florida. It flies rapidly in the pathways of the woods, sailing with its wings expanded. It alights on the ends of projecting branches or on a projecting dead twig, sitting with its wings expanded, drooping, as we set lepidoptera in England, or rather more so than we commonly depress them; quite as much as the line above. I never saw it close its wings over its back. I saw it often in the streets of Savannah, Geo. It seemed common there. Abbot gives the larva on the orange. I found it on the Thorn-ash, or *Stink*-ash of the Florida people; Zanthoxylon fraxineum ("*fragrant* groves of Zanthoxylon,"—Bartram). Boisduval's figure of the larva is, I think, pretty correct.

I used to be much amused with the groups of butterflies in the wet places in the roads. I have seen Turnus, Philenor, and Troilus, Col. Philodice, Tereas Lisa, Melitæa Tharos, Argynnis Cybele, Polyommatus Competor, Danaus Archippus (rarely so), and two or three Hesperiæ, all clustered together on a few yards of mud. I have seen too in Illinois, in the autumn, Colias Philodice and Cæsonia, Terias Nicippe (?) and Lisa, and Callidryas Eubule, in groups, literally of hundreds (the first named insect generally making $\frac{1}{2}\frac{9}{0}$ of the company), on a space not 6 feet square. The Philodices sit with their wings over the back, *in rows*, quite close together, in fact sometimes touching each other, thirty or forty in a row. These things I hardly dare tell, for people won't believe them.

I have put a (?) to the Nicippe. I think there are two species confounded under this name, but am not sure which is the right one.

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PLATES XXXVII, XXXVIII, XXXIX, AND XL.

ON THE AFRICAN SPECIES OF THE GENUS PAPILIO OF MODERN AUTHORS.

HAVING observed great confusion in the nomenclature of many of the African species of the genus Papilio as restricted by modern authors, owing in a considerable degree to the rarity of the larger Lepidoptera from that continent, and the impossibility of determining some of the Fabrician species described from the drawings of Mr. Jones (which, as already stated, I have had an opportunity of examining), and having been also favoured by the Rev. F. W. Hope, M. Boisduval, and the respective curators of the entomological departments of the British Museum and Jardin des Plantes, with the means of describing and figuring several new and unfigured species, I have considered it would be serviceable to give a complete list of the African species of the genus, with a revision of their synonymy and other notes.

The present paper is intended, therefore, to comprise only such species as are inhabitants of the African continent; those which are peculiar to Madagascar and the other adjacent islands will form a subsequent paper. I have, for convenience, adopted the arrangement of M. Boisduval, given in the first volume of his Spécies général des Lépidoptères, although I do not consider the classification and groups given in that work by any means natural. Of this no greater proof can be given than is afforded by his first two species of the genus, P. Antimachus and Antenor, which are as unlike each other as can be conceived in general form, although introduced into the same group; whilst many of the species which exhibit far less striking dissimilarity are formed into separate sections: the great extent of the genus, however, (to which, in my opinion, the Ornithopteri ought to be united, since the chief character by which they have been separated by M. Boisduval—namely, the structure of the anal appendages—is, as shown by M. De Haan, too variable amongst the species restricted by him to the genus Papilio, to allow of its adoption as a generic character,) united with our ignorance of the preparatory states of so many of

the species, are in themselves obstacles sufficient to prevent our obtaining a satisfactory arrangement of the species at present.

Species I.—PAPILIO ANTIMACHUS.

Syn.—*Pap. Antimachus*, Drury, Append. vol. iii. plate 1 (upper side). Jones, fig. pict. tab. 41, fig. 1—2. Donovan, Nat. Repos. vol. iii. pl. 100 and 101 (upper and under sides, copied from Jones's drawings).

M. Smeathmann, by whom this magnificent insect was collected at Sierra Leone, and sent to Drury, stated to him "that it is seen only in mid-day, when every exertion under the direct influence of a vertical sun must be painful to a European. Its flight is also remarkable for its velocity; and, to increase the difficulty of taking it, the insect frequents only the upper branches of the trees, from whence it darts and glances from one branch to another, and never descends nearer to the ground than the height of eight feet. It turns its head about instantly to the glade or path, and will not suffer any person to approach within striking distance of it, but will dart away on the least motion of the body. If the naturalist, however, exert his patience, it will at last become more familiar and careless, and is then to be caught upon some particular branch, to which it will appear more attached than to another."

From the length and narrowness of its wings, which measure nearly nine inches in expanse, (exceeding in this respect any other species in the genus), its flight must resemble that of the Acrææ.

It passed at the sale of Drury's collection into that of Mr. MacLeay, at the price of 4*l.* 4*s.*; nor have I ever heard or seen another example of this species.

Species II.—PAPILIO ANTENOR.

Syn.—*Pap. Antenor*, Drury, App. vol. ii. pl. 3, fig. 1. Donovan, Ins. India, pl. 15 fig. 1.

Drury states that he was ignorant from what part of the world his specimen (which was given him by Mr. Leman) came. Donovan, however, figured the species, or rather copied Drury's figure, in his work on the Insects of *India*, observing merely that it might be "mentioned with much propriety amongst the rarest of the Papilio tribe found in India," without giving any account of the source whence he obtained this information. The Rev. F. W. Hope possesses a specimen which he has informed me that he obtained in a small collection from tropical Africa (Timbuctoo), made by the late Mr. Ritchie.

At the sale of Drury's collection this butterfly was purchased by Mr. Latham, at the price of 2*l.* 12*s.* 6*d.*; it is also included in the

sale catalogue of Francillon's collection. The above are all the specimens yet known in collections.

SPECIES III.—PAPILIO BRUTUS.

SYN.—*Pap. Brutus*, Fabr. Ent. Syst. 3, 1, p. 22.
Papilio Merope, Cramer, pl. 151, A. B., and pl. 378, f. D, E. Donovan, Nat. Repos. fig. 2, pl. 77.
Papilio sulfurea, Pal. Beauv. Ins. d'Afr. Lep. pl. 1.

The figures of Cramer in his plate 151, represent a specimen without a tail, most probably from an accidental mutilation rather than from a perfect individual, although tailless specimens are known to occur in some Eastern species which are ordinarily tailed. The figures of Palisot de Beauvois, above referred to, have been overlooked by former writers, and represent a variety in which the dark band of the hind wings is interrupted.

The species is widely distributed in Africa, ranging not only from the Coast of Guinea to Caffraria, but also occurring in Madagascar, whence M. Boisduval has received specimens varying from the ordinary type in having the spot at the tips of the fore wings smaller and rounded, with the tail black, except at the tip, which is white.

SPECIES IV.—PAPILIO DOREUS.

SYN.—*Pap. Doreus*, Fabr. Ent. Syst. 3, 1, p. 68.
Pap. Phorcas, Cramer, pl. 2, fig. B, C.

A native of the Gold Coast and the Coast of Guinea: specimens are contained in my own and several of the other Metropolitan collections.

SPECIES V.—PAPILIO NIREUS.

SYN.—*Papilio Nireus*, Linn. Fab., Godart, Boisduval. Clerck, Icones, pl. 30, fig. sup. Cramer, pl. 187, fig. A, B., and pl. 378, fig. F, G. Drury, vol. ii. pl. 4, fig. 1, 2. Swainson, Zool. Illustr. 1st Ser. pl. 124.

A native of the Coast of Guinea, Caffraria, as well as of Madagascar, according to M. Boisduval—(Linnæus and other early writers having incorrectly given India as its locality). Cramer appears to have reversed the sexes of this species, figuring the male as the female, and *vice versâ*. Mr. Smeathmann informed Mr. Drury that this insect feeds upon the orange and lime trees, about which the butterfly is always seen flying.

SPECIES VI.—PAPILIO MENESTHEUS.

SYN.—*Pap. Menestheus*, Drury, App. vol. ii. pl. 9, fig. 1, 2. Cramer, pl. 142, fig. A, B.

A native of Sierra Leone, but by no means of common occurrence. Fabricius incorrectly gives India as its habitat.

SPECIES VII.—PAPILIO THERSANDER. (Pl. 38, fig. 1, 2.)

SYN.—*Pap. Thersander*, Ent. Syst. 3, 1 p. 32 (nec Donov. Nat. Repos. 3, t. 75).

Specimens of this species (omitted by Boisduval) are contained in the collections of the British Museum and the Bristol Institution. It is a native of Sierra Leone, and is closely allied to, but smaller than P. Menestheus. Fabricius derived his knowledge of it from Jones's drawings, vol. i. fig. 71; and it is from an inspection of these drawings that I have been enabled to determine the species beyond a doubt. This is the more necessary to be stated, because Donovan, in his Naturalist's Repository, vol. iii. pl. 75, figured the upper and under side of a totally different insect under the name of P. Thersander, and which he says were copied from Jones's figures. If not artificial, they however represent one of the Nymphalidæ (Charaxes sp.), as is evident from the head and antennæ. There are, however, no such figures in Jones's Icones; so that Donovan must have fallen into some strange error respecting the species. M. Boisduval also now possesses a specimen of the insect, and informed me, when in Paris, that notwithstanding Donovan's figures, he had supposed it was the true Fabrician P. Thersander.

SPECIES VIII.—PAPILIO DEMOLEUS.

SYN.—*Pap. Demoleus*, Linnæus; Fabr.; Cramer, pl. 231, fig. A, B. (nec Demoleus Esper.) Pal. Beauvois, Ins. d'Afr. pl. 2 b.
Papilio Demodocus, Esper.

Inhabits the Gold Coast, Coast of Guinea, Caffraria, the Cape of Good Hope, as well as Madagascar, according to M. Boisduval, who informs us that M. Dumolin has reared it at Senegal from the caterpillars which feed on the orange-tree.

SPECIES IX.—PAPILIO LATREILLIANUS.

SYN.—*Pap. Latreillianus*, Godart. Guérin, Icon. R. An. Ins. pl. 76, fig. 1. Griffith, An. Kingd. Ins. pl. 3, fig. 1, (copied from Guérin). Boisduval. (nec Pap. Latreillii, Donovan).

Inhabits Sierra Leone, but rare. Specimens are contained in the collections of the British and Bristol Museums.

SPECIES X.—PAPILIO TYNDERÆUS.

SYN.—*Pap. Tynderæus*, Fabr. Jones's Icon. vol. i. t. 57. Donovan, Nat. Repos. vol. iii. pl. 83. Godart, Enc. M. 9, No. 59.
Papilio Nausinous, God. Enc. Méth. 9, No. 58.

Donovan's figures of this rare species (which inhabits Sierra Leone) nearly agree with those of Jones's above referred to, except that those of the former author have the hind wings too short, and

the colours too high. It differs from the preceding species by having the hind wings dentated.

SPECIES XI.—PAPILIO LEONIDAS.

SYN.—*Pap. Leonidas*, Fabricius, &c.
Papilio similis, Cramer, pl. 9, fig. A, B.

Inhabits tropical Western Africa. In my own and several other London cabinets. This species has a striking analogy with some of the species of Danais.

SPECIES XII.—PAPILIO PYLADES.

SYN.—*Pap. Pylades*, Fabricius. Donovan, Nat. Repos. vol. i. pl. 13.

Inhabits tropical Western Africa. In the collections of Mr. Hope and the British Museum. Fabricius gives it as the type of his genus Zelima (Syst. Gloss. in Illig. Mag. vol. vi.), distinguishing it from Papilio by the "palpi short, biarticulate; second joint rounded at the apex; antennæ long, clavate."—(See Children in Phil. Mag. Feb. 1830, and Horsfield, Lep. Jav.)

SPECIES XIII.—PAPILIO PODALIRIUS.

SYN.—*Papilio Podalirius*. Linn. &c.
Papilio Feisthamelii, Godart; Dup. Suppl. pl. 1, fig. 1 (variety).

M. Boisduval considers the P. Feisthamelii of Duponchel as a local variety of the ordinary P. Podalirius peculiar to the south of Europe and north of Africa, having the ground colour of the wings whiter coloured and the anal spot brighter.

SPECIES XIV.—PAPILIO AGAPENOR.

SYN.—*Pap. Agapenor*, Fabr.; Jones, Icones, 1, tab. 51 (nec Boisduval).
Pap. Policenes, Cramer, pl. 37, fig. A. B. (e Surinamiâ at errore); Boisduval.
Pap. Polixenus, Godart, Enc. Méth. (ex Amer. Septentr. at errore).
Pap. Scipio, Pal. Beauv. Ins. d'Afr. Lep. pl. 2, fig. 1.

Fabricius (E. S. 3, part i. p. 26, No. 76) expressly describes this species as having a red stripe across the hind wings on the under side, and as a native of Africa, referring only to Jones's Icones, 1, tab. 51. Specimens of this insect agreeing exactly with Jones's figures from Sierra Leone and Ashantee are in the collections of the British Museum and Mr. Hope. It is further distinguished by the four *straight* transverse pale bars across the discoidal cell of the fore wings.

Cramer, 1, p. 61, and pl. 37, fig. A, B, figures it under the name of *Policenes*, giving Surinam as its locality. Godart changed the name in the Encycl. Méth. 9, 52, to *Polixenus*, also giving

North America as its habitat; and Boisduval gives it under the name of *Policenes* (H. N. Lép. 1, p. 261), and as inhabiting Surinam and some of the Antilles. I can see no difference between the true African specimens and the figures and descriptions of the authors above referred to, and therefore think that they must have erred in the locality they assign to the species.

Palisot de Beauvois figures the true African *Agapenor* under the name of *Pap. Scipio* (Lép. pl. 2, fig. 1). *P. Agapenor* of Boisduval is distinct. Godart has given the true *Agapenor* (as well as *P. Polixenus*); but as his knowledge of it is stated to be derived from Fabricius alone, he evidently did not perceive the identity.

Species XV.—PAPILIO ANTHEUS.

Syn.—*Pap. Antheus*, Fabr.; Cramer, pl. 234, fig. B, C.
Papilio Antharis, God. Enc. Méth.
Papilio Agapenor, Boisduval (nec Fabr.)

Fabricius (Ent. Syst. 3, 1, p. 36) expressly says of this, "Statura omnino *P. Agapenor* at ecaudatus," referring merely to "Cramer, Ins." [that is, to his pl. 234, B, C.] and to Jones's Icones, 1, pl. 56. These figures agree in all respects, except that the latter have no tails to the hind wings. The species is stated by all these authors to be from Amboyna. It, however, precisely agrees with specimens lately received from Sierra Leone and Ashantee by the British Museum and Mr. Hope, having long tails. Godart and Boisduval give the Fabrician and Cramerian insects as distinct, retaining the name of *Antheus* for the Fabrician species, which they only know from the writings of Fabricius; Godart giving Cramer's species under the name of *Antharis*, and as a native of North America; and Boisduval under the incorrect one of *Agapenor*, from which species it is at once distinguished by the want of a red stripe on the under side of the hind wings, and by the *curved* pale bars in the discoidal cell of the fore wings. I have no doubt that the early authors erred in their locality Amboyna, and that all these supposed species are identical and natives of Africa.

Species XVI.—PAPILIO LALANDEI. (Plate 37, fig. 1, 2.)

Syn.—*Pap. Lalandei*, Godart, Enc. Méth.; Boisduval.

Godart, in the Encyclopédie Méthodique, refers to the Mémoires de la Société Linnéenne de Paris, vol. 2, pl. 1, Lep. fig. 1, 2, for figures of this butterfly; but M. Boisduval informs me that those figures were never published: I have therefore represented its

upper and under sides, in the accompanying figures, from drawings made by myself in Paris, in May last, from a specimen which M. Boisduval has received since the publication of his volume containing this genus. It is a native of Caffraria. There are several patches of dark hairs on the outside of the macular band of the fore wings towards the anal angle.

SPECIES XVII.—PAPILIO ZENOBIA.

SYN.—*Pap. Zenobia*, Fabr. Donovan, Nat. Repos. pl. 179. Jones, fig. pict. 1, tab. 68.

A native of Sierra Leone, but very rare; specimens of it are contained in the collections of the British and Bristol Museums, and in the Banksian Cabinet, whence the species was described by Fabricius.

SPECIES XVIII.—PAPILIO MESSALINA.

SYN.—*Pap. Messalina*, Stoll (Suppl. Cramer), p. 125, pl. 26, fig. 2.
Pap. Cynorta, Boisduval, Sp. Gen. Ins. Lep. 1, 370 (nec Fabricius).

The Cynorta of Fabricius, as proved by an inspection of Mr. Jones's Icones, is a distinct species from the Messalina of Stoll, with which Boisduval has confounded it. This is a rare species, inhabiting Sierra Leone (and Caffraria according to Stoll). It is contained in the collections of the British and Bristol Museums.

SPECIES XIX.—PAPILIO CYNORTA. (Plate 40, fig. 3, 4.)

SYN.—*Papilio Cynorta*, Fabr. Jones, Icon. pict. 1, tab. 87. (nec P. Cynorta, Bdv.= P. Messalina.)
Papilio Zeryntius, Boisduval.

This species has been confounded with the preceding by Boisduval, by whom it is suggested that it may be only a local variety of that insect; an opinion in which I cannot concur. The black portion of the disc of the fore wings, as well as the dilated veins which separate the white bar, are clothed with black woolly hairs. Mr. Hope possesses a species received from M. Westermann, from Sierra Leone; and there is a specimen in the collection of the British Museum which was also confounded with the preceding species. Jones's figures give excellent representations of the upper and under sides of the species; but as no figures of it have yet been published, I have added it to my illustrations.

SPECIES XX.—PAPILIO BOISDUVALLIANUS. (Plate 40, fig. 1, 2.)

P. (n. sp.) alis supra nigris fascia lata, e margine anali ad medium anticarum ducta plagaque obliqua submedia, albis; subtus albo similiter variis, basi posticarum fulvis nigro variis, apiceque fuscis. Expans. alar. fere unc. $3\frac{1}{2}$.
Habitat Sierram Leonam. In Mus. Westermann et Boisduval.

Although it is very desirable, when possible, that the specific

names in long genera should maintain a uniform character, yet I think the present is an instance in which the uniformity which has prevailed in the names of the species of the present genus, being selected from names celebrated in ancient story, may be broken. It has already been done in the name of a species dedicated to Latreille, and entomologists will, I trust, agree with me in the propriety of adopting the name of the most distinguished modern French lepidopterist as that of a species for the knowledge of which I am indebted to his liberality.

On the upper side it is of a dull blackish-brown colour, the body marked in front with several white dots, and the wings with a broad white fascia extending from the anal margin of the hind wings half-way across the fore wings; another oblique broad white bar extending across the fore wings beyond the middle, occupying the extremity of the discoidal cell. The tip of the wings is marked with a small white marginal dot; the white bar on the hind wings is gradually shaded off into the ground colour of the middle of the wing. On the under side the fore wings are dark brown; the apex, beyond the oblique bar, being luteous-coloured. The base of the hind wings fulvous clay-coloured, with black markings; and the apical half of these wings fulvous-brown, the white markings being as on the upper side. The abdomen is pale luteous at the apex; the thoracic portion of the body black with white spots.

Received by M. Boisduval from M. Westermann, and inhabits Sierra Leone.

Species XXI.—PAPILIO HIPPOCOON.

Syn.—*Papilio Hippocoon*, Fabr. Ent. Syst. 3, 1, 38. Jones, Icones, fig. pict. 1, tab. 88. Boisd. Sp. Ins. Lep. 1, 243.
Papilio Westermanni, Boisduval, op. cit. p. 372.
Papilio Niavius fem. Cram. 234, A.

Messrs. Godart and Boisduval have failed in their writings to recognise this as a Fabrician species, although Boisduval describes it, *ex visu*, from a specimen furnished by M. Westermann, adding the description of Hippocoon from the works of Fabricius alone. The upper and under sides are beautifully figured in Jones's Icones, which have enabled me to identify the species. Cramer gave it as the female of a species of Danais (D. Niavia), to which indeed it bears great resemblance. It is a native of Guinea and Sierra Leone.

SPECIES XXII.—PAPILIO TROPHONIUS. (Plate 39, fig. 1, 2.)

SYN.—*Papilio Trophonius*, Westw. in Ann. Nat. Hist.
Papilio Cenea, Stoll, pl. 29, fig. 1. (nec P. Cenea, Linn.)

This species, which has been overlooked by M. Boisduval, bears considerable resemblance to several of the preceding species, but differs from them all in the colour of the pale portion of the wings. In the specimen figured the wings of the upper side are dark brown, with a large fulvous red patch, occupying a large space along the inner margin of the fore wings, and the greater portion of the hind wings, with a rather narrow edge of brown with white spots arranged in pairs on the hind wings. The fore wings have also a clay-coloured oblique bar running nearly across the discoidal cell, with a large pale patch beyond its extremity, and several small submarginal pale spots. On the under side the arrangement of the colours of the wings is nearly similar, except that, as in all the allied species, the extremity of the fore wings is pale clay-coloured brown, and the veins, as well as the intermediate longitudinal striæ, are darker brown. The body is brown, spotted in front with white; the abdomen buff, with a longitudinal dorsal stripe, brownish-black, and the sides with two rows of dark dots.

Stoll's figures agree with other specimens in the cabinet of the British Museum, and my own, in which the fore wings have an oval patch of pale clay colour behind the middle of the discoidal cell, and the clay-coloured portion of the hind wings does not extend beyond the middle of the wing. The pale spots on the fore wings are also much smaller than in the specimen figured by me, and the base of the hind wings is also brown on the upper side. It is possible that these latter may prove to be specifically distinct from the more richly-coloured specimen which I have figured, as I believe the allied species of Papilio do not exhibit such marked sexual differences. In such case the name of Trophonius should be retained for the species here figured; and Stoll's kind may be named P. Cenæus, although his statement that his insect is a "Nymphe aveugle à quatre pieds," and his error in giving to the species a name employed by Linnæus for a different species of Papilio, scarcely warrant the retention of his specific name. It is a native of Guinea and Caffraria.

SPECIES XXIII.—PAPILIO ADAMASTOR. (Plate 38, fig. 3.)

SYN.—*Pap. Adamastor*, Boisduval, Sp. Gen. Lep. 1, 371.

Described by Boisduval, from a specimen sent to him by M. Westermann, who had received it from the coast of Guinea. Mr. Hope

has it from Ashantee, and there is a specimen in the collection of the British Museum. As the species has not hitherto been figured, I have represented its under surface (the upper side differing only in being uniformly black, with similar white markings) in order to show the difference between it and the next species.

SPECIES XXIV.—PAPILIO AGAMEDES. (Plate 39, fig. 3, and Plate 37, fig. 3.)

SYN.—*Pap. Agamedes*, Westw. in Ann. Nat. Hist.

P. alis anticis subdiaphanis basi obscurioribus, fascia lata alba e margine interno ad medium alæ, inde versus costam per medium aream discoidalis, extensâ, punctisque submarginalibus albis: posticis ecaudatis fuscis, fascia lata albâ e medio fere ad basin extensa postice dentata, punctisque albis duplici serie ordinatis; alis posticis subtus pone fasciam pallide fuscis nigro lineatis et albo maculatis, basi aurantiis nigro bimaculatis. Expans. alar. unc. 3.

This species, which is unique in the cabinet of the Rev. F. W. Hope, inhabits Ashantee. It is closely allied to the preceding, but differs not only in the disposition of the white markings of the wings, but in the semitransparence of the apical portion of the fore wings, which is narrower than in the preceding species. I at first thought it possible to be the other sex of that species, until I carefully examined the body, when I found it was of the same sex as specimens of Adamastor in Mr. Hope's collection.

SPECIES ? XXV.—PAPILIO ORESTES.

SYN.—*P. Orestes*, Fabricius, Ent. Syst. 3, part 1, p. 34.

Fabricius describes a species of Papilio under this name, giving it as a native of Africa, on the authority of Mr. Francillon's collection. This species is regarded both by Boisduval and Godart as a doubtful species of Papilio. Mr. Francillon's insect was, however, fortunately drawn by Mr. Jones in his Icones (to which, however, Fabricius does not refer), and from a careful examination of these figures it appears that the insect is in fact a species of Papilio, exceedingly like the Indian P. Nomius of Esper, and P. Aristæus, Cr., but with a very short tail. Both those species have, however, long tails. Notwithstanding the species of the group to which these insects belong are widely dispersed, I have little doubt that the specimen in question was an Indian insect, which had been partially mutilated.

All the plants represented in these plates are natives of Sierra Leone, and belong to singular African orchidaceous genera; namely, Plate 37, Bolbophyllum barbigerum, Lindl. (Bot. Reg. 1942); Plate 38, Polystacha grandiflora (Bot. Mag. 3707); Plate 39, Angræcum distichum, Lindl. (Bot. Reg. 1781); Plate 40, Eulophia lurida, Lindl. (Bot. Reg. 1821).

ENTOMOLOGICAL INTELLIGENCE, NOTICES OF NEW WORKS, &c.

No. X.

COLLECTIONS AND LIBRARY OF THE LATE PROFESSOR AUDOUIN.—It was stated in p. 94, that the collections of M. Victor Audouin had, since his decease, been transferred to the Jardin des Plantes, and that his library would most probably be sold by public auction. In a notice of this work, which appeared in the Revue Zoologique for 1842, p. 121, a doubt was thrown upon the former of these statements. It is proper, therefore, to mention that it was intended only to apply to such collections of M. V. Audouin as had been formed with the view of illustrating the habits and economy of various insects, and which had been more especially alluded to in the former part of my memoir of the deceased gentleman; and when in Paris, in May and June last, I had the pleasure to see portions of these collections already arranged with the greatest care, and publicly exhibited in one of the galleries of the Jardin des Plantes; these portions consisting of specimens of the nests of insects, and illustrations of their various modes of attack on wood and other materials. Such a public exhibition of objects tending to elucidate the economy of insects, carefully arranged and labelled, together with specimens of the insects by which the various labours, &c., have been performed, must, in my opinion, be not only far more interesting, but also more instructive, than a few cases of specimens with merely their scientific names attached; the greatest praise is, therefore, due to M. Milne Edwards, not only for the arrangement and exhibition of these specimens collected by M. Audouin, but also for the great care which has been bestowed upon the arrangement of the magnificent collection of Crustacea belonging to the Jardin des Plantes, all of which are beautifully set, named, and exposed in the galleries of the Jardin des Plantes. I know of but one collection in this country arranged with the view of illustrating the various branches of the economy of insect life—namely, that of the late Mr. Sells; and all who had the pleasure of knowing that gentleman, and of examining his museum, will agree with me as to the great amount of knowledge to be obtained by the inspection of a single drawer of one of his cabinets. At my request he drew up, shortly

before his lamented decease, a brief notice of his plan of arrangement, which has been published in the last part of the Transactions of the Entomological Society of London. A more philosophical arrangement might perhaps be proposed, but it would probably be more beneficial to take the Introduction to Entomology* of Messrs. Kirby and Spence as the guide for such an arrangement, because as that work is so deservedly well known, it would be easy to refer to its pages as a catalogue raisonnée of the collection.

Of the other portions of M. Audouin's collections, as well as of his numerous manuscripts and drawings, entomologists will learn with pleasure that a careful revision will be made, with the view of publishing all which are found to be of sufficient interest and in a sufficiently complete state. The publication of the completion of his Memoir on the Pyralis of the Vine (which has lately taken place), will sufficiently prove the value of these manuscripts, and the justness of my estimate of M. Audouin's talents, and at the same time raise our anxious anticipation for the publication of the remainder.

The sale of M. Audouin's library took place in May last, and occupied fourteen days (see ante, p. 110). The prices obtained for the books was in general high, the amount realised being about 20,000 francs. Many of the works were purchased for the libraries of the Jardin des Plantes and of the Royal Society of London. The prices obtained for a few of the books are subjoined.

	FRANCS.
De Geer's Mémoires, 7 tom. in 9 vol. 4to	500
Goeze, Entomologische Beitrage, 3 vols. 8vo	38½
Kirby and Spence, Introduct. 4 vols., 4th Ed.	70
Latreille, Précis des Caractères Génériques, 1 vol. 8vo.	20
Réaumur, Mémoires, 6 vols. 4to	40
Rosel, a beautiful MS. translation, 6 vols., 4to	140
Schäffer, Icones Insect., Ratisb., 4 vols., 4to	94
Germar, Fauna Ins. Europ., 21 fasc.	82
Harris, Exposition Engl. Ins.	50
Latreille, Descript. d'Ins. d'Afrique, 22 pages	10½
Say, American Entomol., 3 vols., 8vo	139
Stephens, Illustr. of Brit. Ent.	170
Germar's Magazin d. Entomol., 4 vols., 8vo	44
Illiger, Magaz., 5 vols. 8vo in 3	55
Silbermann, Rev. Entomol.	80
Annales de la Société Entomol. de France, 1832—1840	200
The Entomological Magazine, *complete*	100
The Arcana Entomologica (7 numbers)	29½
Billberg, Monographia Mylabridium	40
Dejean and Boisduval, Iconogr. Col. d'Eur.	212

* A new edition of this work is in the press, in which I am able to state, from an examination of some of the proof sheets, very great additions have been made both to the text and notes, portions having been entirely re-written. Notwithstanding this, the work is announced at a reduced price.

	FRANCS.
Herbst and Jablonsky's Coleoptera	200
Laporte and Gory, Icon. Ins. Col.	192
Cramer, Exotic Lepidopt.	180
Godart and Duponchel, Lep. de France	411

Australian Species of Scaritidæ.—In the notice of the sixth number of this work, which appeared in the Revue Zoologique, as already mentioned in the preceding article, M. Reiche suggests that Carenum perplexum, on account of the square base of the elytra with the humeral angle *saillant*, may be presumed to possess wings, and thus generically to differ from the others, whilst C. megacephalum and tinctilatum, on account of the form of the thorax, should probably be retained as a distinct genus, under Mr. Newman's name Eutoma.

The three large species of Scarites are considered by M. Reiche as forming (probably with the Sc. rotundipennis, Dej., which is stated to be a native of the Cape of Good Hope*), a separate group, distinguished by the absence of wings, the dilatation of the abdomen, and the cylindrical terminal joint of the palpi.

Mr. Hope informs me that Mr. MacLeay has named this section in his manuscripts Scaraphites, and that he has discovered a new species on the east coast of New South Wales, at Elizabeth Bay, where it was found many feet deep in the earth, whilst trenching in sandy soil to form a Pinetum. I would suggest that it should be named in honour of its discoverer.

Species XVI.—*Scarites (Scaraphites) MacLeaii.* S. niger subnitidus, elytris obovatis, singulo striis 6 tenuibus punctatis serieque sub-laterali punctorum majorum, pedibus anticis obtuse dentatis, tibiisque intermediis spina acuta apicali externa armatis. Long. corp. lin. 13; lat. elytr. lin. $5\frac{1}{2}$.

This species most resembles Sc. Lenæus in its narrower form and distinctly striated elytra, but it differs from that species in several respects. The mandibles are obtusely dentated, each having one minute tooth below the apex, and a large compressed one in the middle. The two oval impressions on the head are radiato-striolated in front. The pronotum has a slender, but rather deep central impressed longitudinal line, as well as a distinct anterior transverse one, most decided at the sides; and there is no impression on each side towards the anterior angles, nor are the posterior angles obliquely foveated, being, on the contrary, convex. The elytra are broadly obovate, being evidently narrowed towards the base. Each has six fine impressed punctate striæ, beyond which is a row of seven larger submarginal punctures, three others of which are placed in an

* Is not this an erroneous habitat?

oblique line towards the tip of the elytra; there is also a marginal row of punctures at the base of each side. The teeth of the fore tibiæ are obtuse, and the middle tibiæ have a single acute tooth on the outside, at the tip.

I also possess a species of this group, which I had considered to be identical with Sc. Silenus, with which it agrees in size, but from which however it differs, in having the elytra more regularly rounded; the mandibles are also differently toothed, wanting the small tooth on the inside near the tip, and the left mandible having one large central simple tooth, with a small lobe towards the base, whilst the right mandible has two strong central teeth. If this should ultimately prove a distinct species, it may receive the name of Scarites (Scaraphites) confusus.

My Sc. sculptilis is, by M. Reiche, in the article above referred to, considered as closely allied to Scarites lateralis, Dej., supposed to be a native of the East Indies, and belonging to Dejean's 5th section of the genus.

M. Reiche has also added descriptions of two new Australian species, belonging to my genus Gnathoxys *, namely—

Species XVII.—*Gnathoxys obscurus*, Reiche. G. nigro-æneus subnitidus, pronoto subrotundato canaliculato angulis anticis haud porrectis, elytrorum disco punctato-striato; striis octo geminatis interruptis; lateribus et apice crebre et irregulariter punctatis. Long. 14 mill. (= fere 7 lin. mens. Angl.) Hab. Australia, Swan River. Mus. Reiche.

Species XVIII.—*Gnathoxys cicatricosus*, Reiche. G. elongatus æneo nitidus, pronoto subovato canaliculato, angulis anticis haud porrectis, elytris profunde, late et irregulariter-impressis, apice rugoso plicatis. Long. 13 mill. Hab. Australia, Swan River. Mus. Reiche.

Mr. Newman has also published the description of another species of Carenum in the Entomologist † for September last (p. 369).

Species XIX.—*Carenum loculosum*. C. nigrum fronte profunde longitudinaliter bisulcata, prothorace transversè lunato medio longitudinaliter sulcato; elytris foveis magnis pravè dispositis asperis; tibiis anticis dentibus 2 longis externis spinisque 2 internis armatis; tibiis intermediis dentibus 5—6 externis minutis spinis 2 apicalibus. Long. corp. .625 unc., lat. .25 unc.

It is perfectly distinct from Carenum Spencii, Westw.

Mr. MacLeay has recently forwarded to Mr. Hope a Carenum, under the name of C. 4-punctatum, which agrees with Bonelli's species (C. Bonellii mihi), except that the central fossula of the pronotum is scarcely transversely striolated, and the oblique impressions on each side at the base are scarcely distinct. It is a native of New South Wales, and was found under stones at Illawarre.

* M. Guérin Meneville showed me, whilst in Paris, two Indian insects apparently belonging to this genus, possessing the same structure of the fore feet.

† I regret to mention that the proprietors of this work are under the necessity of discontinuing its publication with the number which will appear on the 1st of November.

MONOGRAPHIA ANOPLURORUM BRITANNIÆ; or an Essay on the British species of Parasitic Insects belonging to the order Anoplura of Leach, with the modern divisions of the genera according to the views of Leach, Nitzsch, and Burmeister; with highly magnified figures of each species. By HENRY DENNY. Author of "Monographia Pselaphidarum et Scydmænidarum Britanniæ," &c. London. Henry G. Bohn, 1842. 8vo, 286 pages, and 26 plates.

Mr. Denny, so well and advantageously known by his illustrated work on the British Pselaphidæ and Scydmænidæ has, in this work, published a beautiful series of more than 200 highly magnified coloured figures, with descriptions and notices of 248 species of lice found in this country, one half of which at least are now for the first time made known to naturalists.

The excellent manner in which the work is executed, has led to a request on the part of the British Association, that he will also illustrate the exotic species of the group. A few remarks upon the introductory portion of the work will not, however, be irrelevant. Mr. Denny states that the opinion that *each* and every animal has its own peculiar parasite is not borne out by facts; thus *Docophorus icteroides* is found on nearly every species of duck which has come under the author's notice. On extending our observations to genera, we find them take a wider range; and it is in only two or three cases that it could, with any confidence, be asserted that they were diagnostic of certain families of Vertebrata. It is easy to say whether they belong to quadruped or bird, but more difficult to pronounce the peculiar family of either, as some genera of each division appear perfect cosmopolites; thus, Pediculus infests man, Quadrumana Rodentia, Carnivora, Pachydermata and Ruminantia; Nirmus infests every order of birds except the Gallinacea; Docophorus all but Gallinacea and Columbidæ; Lipeurus infests the orders Gallinacea, Grallæ, Palmipedes, and Accipitres: whilst a few on the other hand are nearly certain indexes to the families; Eureum being only found on Chelidones; Trinoton only on Palmipedes; Goniocotes and Goniodes only on Gallinacea and Columbidæ; Gyropus only on the Guinea pig in this country; and Phthirus only on man. Mr. Denny has not made any observations on the occurrence of several distinct species, and even genera, upon the same animal.

The extent of the variations of form at different ages in these insects, has not received the attention which it merits; indeed Mr. Denny's observations hereon in pages xii. and xvii. are somewhat at variance with each other. This is a point the more neces-

sary to be elucidated, as the character of the Ametabola of Leach (insects undergoing no metamorphosis) adopted by Mr. Denny, depends upon its existence. My own opinion on the position of these insects, given in my Introduction to the modern classification of insects, is called into question. As however I consider the fundamental characteristic of the class Ptilota to consist in a *distinct metamorphosis involving the development of wings*, I cannot admit the Anoplura of Leach into that class; and my answer therefore to Mr. Denny's question as to the class to which I consider these parasitic insects to belong, will be found in the development of my views on the primary divisions of the annulose animals given in the fourth page of my Introduction, where I have adopted the order Ametabola of MacLeay (with the omission of his Vermes) *because it leaves the Ptilota distinct*, whilst Mr. Denny unites the Thysanura and Anoplura as a primary division, with the metamophotic insects, under the general name of Insecta, which I maintain ought to be applied to the whole of the annulose animals with articulated feet. Mr. Denny justly eulogises Dr. Burmeister as the "first authority for this tribe of insects," although he properly rejects his division of the Anoplura into Rhynchota and Mallophaga, the former (Pediculidæ) being united with the rostrated Hemiptera of Linnæus, whilst the latter are grouped with the mandibulated Hemiptera or the Orthoptera of recent authors.

Mr. Denny has carefully investigated the writings of preceding authors; a few of the figures published in the posthumous work of Lyonnet, appear however to have been overlooked: thus, Lyonnet's plate 4, fig. 4, represents a species found upon the heron, which appears to be identical with Liotheum importunatum.

As a work upon the indigenous species of these insects it is invaluable, but for the higher ends of zoological science, this group of insects still requires illustration. With the exception of a figure of the female organs of generation of the human louse, copied from Swammerdam, we have no attempt to exhibit the internal structure of these insects; and the only figures which are given of the details of the mouth from a single species (Pediculus vestimenti) are copied (and not quite correctly) from Burmeister's Genera Insectorum, a few figures are indeed added of the trophi in situ of two or three of the mandibulated species; but the interest attached to the distinction of haustellated and mandibulated trophi in a group whose general habits are so entirely identical, required a much more precise examination of their structures in this respect.

PLATE XLI.

DESCRIPTION OF A NEW MANTIDEOUS INSECT WITH POINTED EYES.

Of the many curious forms exhibited by the different species of Soothsayer insects (Mantidæ), those which have conical pointed eyes are not the least remarkable. The insects thus circumstanced constitute several distinct genera. Two of these genera are distinguished by having an upright horn in the middle of the head; namely,

Hymenopus, Serv., having the four posterior femora furnished with a broad membrane throughout their entire length, and consisting of the single species *M. coronata*, Oliv., from the Eastern Archipelago; and

Harpax, Serv., having the fore posterior femora furnished near the apex on the lower or posterior edge with a foliaceous lobe, and consisting of several species natives of Senegal, the Cape of Good Hope, and other parts of Africa as well as Java and Sumatra. One species is described by Serville as a native of Cayenne, *H. pictipennis*, Serv.; but this is most probably doubtful, especially as Burmeister gives this species as apparently identical with the *H. cornuta*, Oliv., Latr., which is a native of the Cape of Good Hope. The synonymy of the species of this genus is rather confused. See Charpentier and Burmeister's Memoirs in the first and second volumes of Dr. Germar's Zeitschrift f. die Entomologie, and De Haan (Bijdragen tot de Kennis d. Orth. p. 89,) who has, however, added some species which have not conical eyes, including *Epaphrodita musarum Serv.**

Serville divides the species of this genus into two sub-genera:—

1. *Harpax*, proper. Prothorax with the sides greatly dilated; sides of the terminal abdominal segments lobed. Head with a vertical horn bifid at the tip. [The latter character is, however, sexual, all Serville's specimens belonging to this section being females, whereas the male has the vertex furnished with a shorter horn obtusely mucronated]. Type, *M. ocellata*, Pal. de Beauv.
2. *Creobroter*, Serv. Prothorax scarcely dilated at the sides; sides of abdominal segments not denticulated. Vertex furnished with a tubercle. Type, *M. urbana*, Fabr. (*gemmata*, Serv.).

The three other genera which possess conical pointed eyes are destitute of a horn on the crown of the head as well as of lobes on the hind femora.

Acanthops, Serv., has the body short and comparatively broad, with the fore margin of the wing-covers sinuated, and the terminal segments of the abdomen dilated at the sides. Type, M. *sinuata*, Fabr. (fuscifolia Stoll, f. 14). See as to the synonymes of the species of this genus, Charpentier in Germar's Zeitsch 1, 375; 3, 299. South America is the geographical station of this genus.

The two remaining genera are very long and slender in form.

Schizocephala, Serville, has the eyes porrected, the hind femora destitute of spines or lobes, and the abdominal setæ elongated, slender, articulated, and attenuated to the tip. Type *Mantis bicornis*, Linn. An inhabitant of the East Indies. Dr. Burmeister has described a second species from the Berlin Museum.

Toxodera, Serv. (Ann. Soc. Ent. de France, tom. 6, p. 25, pl. 2; and H. n. Orth. p. 168, pl. 5). The type of this singular genus (*T. denticulata*, Serv.) possesses conical eyes which are laterally extended. The fore posterior femora are furnished, along more than half their length, with three membranous lobes emarginate at the middle, and the apex of these femora is armed with four strong spines. The abdomen is terminated by two broad foliacious appendages, which appear to be articulated. This insect (which is $4\frac{1}{2}$ inches long) is a native of Java, and is unique in the Museum of the Jardin des Plantes. It appeared to me on an examination of this specimen that the apex of each of the ocular cones was not facetted but similar to the remainder of the skull.

Notwithstanding various structural differences, I have considered the insect figured in the opposite plate as also belonging to the genus Toxodera; it is, however, a native of Senegal, where it represents its Javanese ally, as is also the case in the genus Harpax.

TOXODERA (HETEROCHÆTA) *tenuipes* (Plate 41).

Fusca, tegminibus brunneis, postice pallidis, alis infumatis, nigro fasciatis, cyaneo-iridescentibus, coxis anticis longis, antice lobatis et spinosis, femoribus anticis basi vix crassioribus, femoribus 4 posticis longis apice subtus foliolis duobus minimis instructis, supra inermibus, cercis analibus latis foliatis, ut videtur 6-articulatis, oculis oblique porrectis; spina terminali nigra haud granulata. Long. corp. unc. 5. Expans. tegm. unc. $4\frac{1}{5}$.

Inhabits Senegal. In the collection of the Rev. F. W. Hope.

Obs. In the elongated form of the body and the dilated appendage at the extremity of the abdomen, these insects approach the Phasmidæ, whilst in general characters they are very nearly allied to the typical Mantidæ.

The singular Orchidaceous plant represented in the plate is the Megaclinium maximum, Lindl., a native of Sierra Leone.

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* M. De Haan has formed Mantis rubicunda into a subsection of his Mantis C. with the character "Oculis trigonis acutis." He also gives to the genus Orthodera the character "oculi angulati," but this is not correct.

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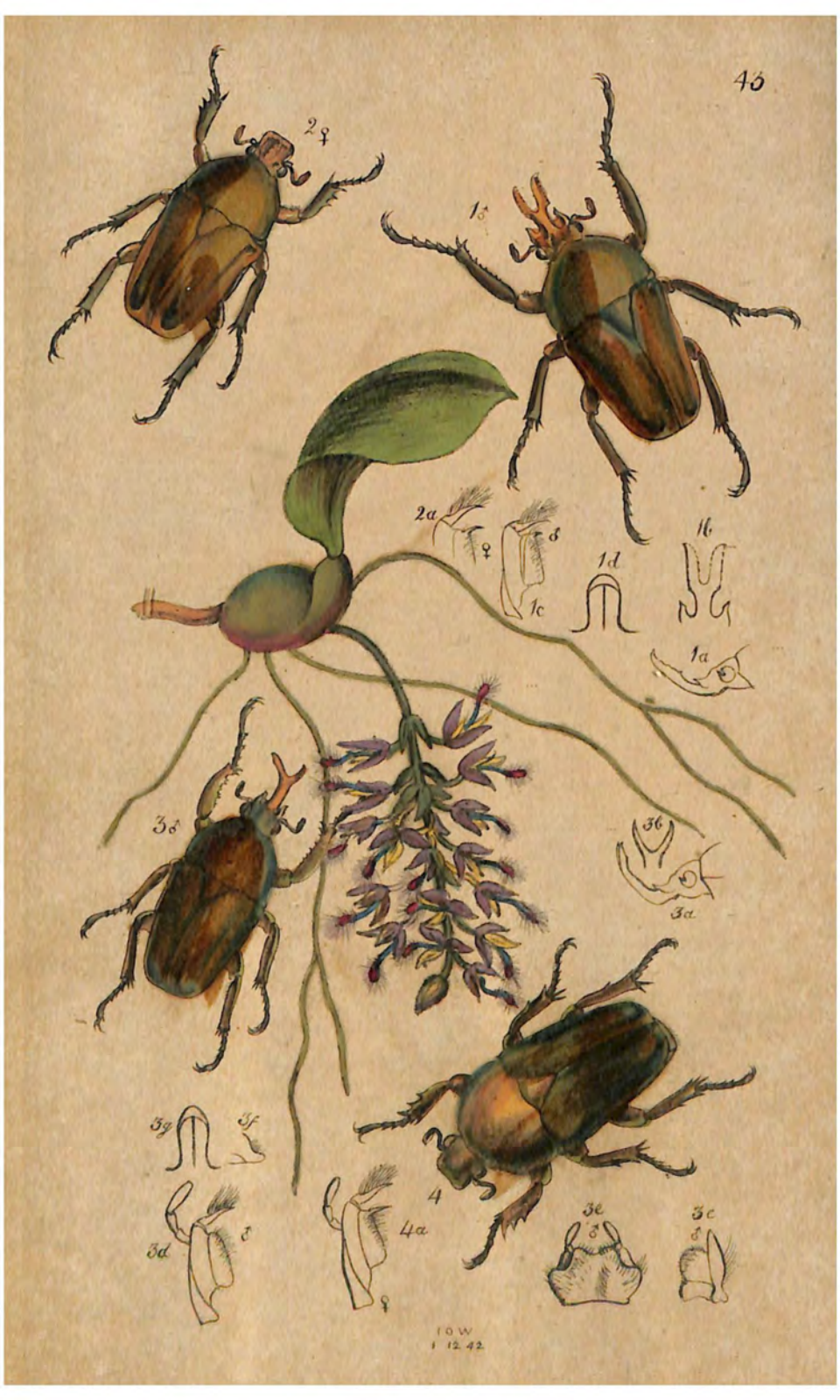

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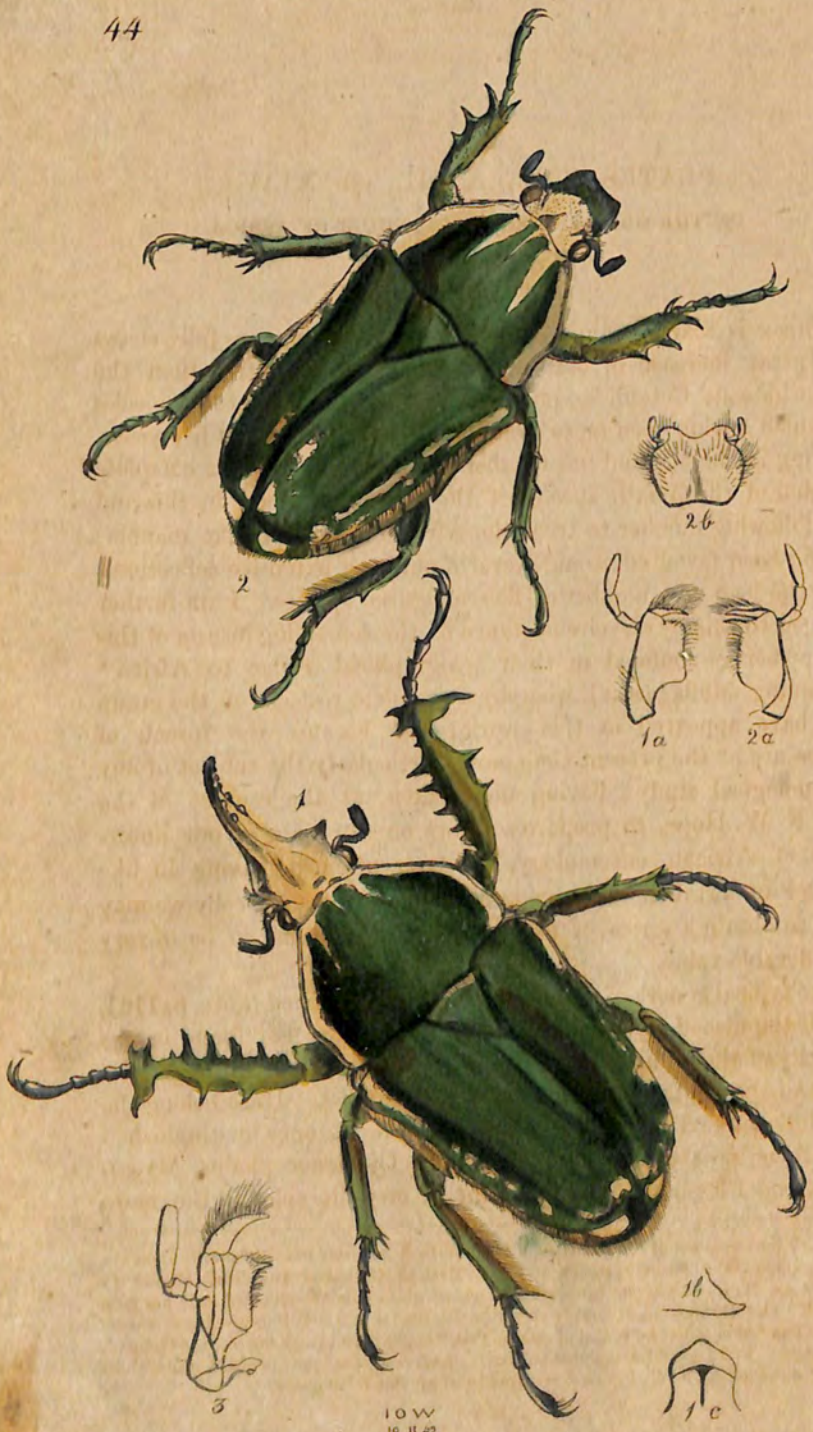

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PLATES XLII, XLIII, AND XLIV.

ON THE GOLIATHIDEOUS CETONIIDÆ OF AFRICA.

PART I.

THERE is scarcely any group of insects which more fully shows the great increase of our modern stores of novelties than the Goliathideous Cetoniidæ, our knowledge of the number of species of which having been more than doubled during the last five years. Having in the 8th and 9th numbers of this work given a complete revision of the Asiatic species of the group, I propose in this and the following number to treat the African species in like manner, having been favoured, from several of our most extensive collections, with the loan of a number of fine unfigured species. I am further induced to this by the circumstance of the remaining insects of this group being confined in their geographical range to Africa * (including Madagascar), whereby a complete revision of the group will have appeared in this work; and because the insects of Africa are at the present time more particularly the subject of my entomological study; having undertaken, at the request of the Rev. F. W. Hope, to prepare a report on the state of our knowledge of African entomology, other gentlemen having in like manner undertaken other geographical districts, whereby we may hope to obtain a series of papers, which cannot fail to be of very considerable value.

The typical genera of this group, as already noticed (ante, p. 114), are distinguished by two peculiarities, which are not found in the majority of the group—namely, the suborbicular form of the prothorax, and the dentated upper lobe of the maxillæ. Here belong the two following African genera; which are at once distinguished from their Asiatic analogues, Narycius, Cyphonocephalus, Mycteristes, and Phædimus, by their want of metallic colours, the more

* With the exception of the Brazilian Yncæ (which Burmeister has satisfactorily shown to belong to the Trichiideous section), and the Mexican Goliathus Hoepfneri, G. and P. (Ischnoscelis H. Burm.) a very interesting insect, of which only the cornuted male has been observed. Dr. Burmeister, as already stated (p. 70, note +), at first considered it as nearest allied to Ischnostoma, but he is now of opinion that it ought to be introduced into the Goliathideous group. From a careful examination and dissection of the insect, which I made whilst in Paris in the past summer, I am not prepared to admit this relationship.

robust galea of the maxillæ, and the comparatively shorter fore-feet of the males.

HYPSELOGENIA, *Burmeister.*

This genus is composed of two species, whose affinities have, until recently, been imperfectly understood; Gory and Perchéron placing them with Diplognatha, whilst Mr. MacLeay, who did not correctly examine the structure of their maxillæ, referred them to his Cælocephalous section of Ichnostoma; (Ceton. of South Africa, p. 43). By Dr. Burmeister their true structure has been observed, and their affinity to Goliathus (long ago pointed out by Latreille and others), satisfactorily established, in his beautiful work entitled 'Genera Insectorum.' They are of small size, and natives of Southern Africa. The clypeus is moderately cornuted, the disc of the head being concave, terminated in front by an ob-conical, porrected, and erect lobe. The fore-feet of the males are scarcely longer than in the females, and the tibiæ in both sexes are externally tridentate, the teeth, however, being very obtuse in the males. The inner lobe of the maxillæ is not armed with a tooth.

Species I.—*Hypselogenia concava*, Gory and Perch., Mon. pl. 17, fig. 1. (Diplognatha c.) ♂. Burmeister, Gen. Ins. fasc. 7. ♀. MacLeay, op. cit. p. 43.

Species II.—*Hypselogenia albopunctata*, Gory and Perch., pl. 17, fig. 2. ♂. Burm. Gen. Ins. fasc. 7. ♂.

Syn.—*Cetonia Geotrupina*, Schonherr, Syn. Ins. 1, 3. App. 46.

GOLIATHUS, *Lamarck.*

The insects of this genus are indeed well entitled to the generic name, which Lamarck gave to them by making use of the specific name which had been given to one of the species by Linnæus. Dr. Harris, the most distinguished of living American entomologists, adopting the opinion which has been entertained with much justice by many recent writers, of the injustice of such a system of nomenclature, has proposed to restore the specific name Goliata, and to substitute that of Hegemon instead of the present generic name. Perfectly agreeing with Dr. Harris in his opinion of the impropriety of such nomenclature, I yet do not adopt his generic name, because I also consider that when such an improper substitution of names has been universally adopted for nearly half a century (as in this case), it would not be advisable to alter it.

From Hypselogenia the true Goliath beetles are distinguished by the bifid horns of the clypeus of the males, and the entire clypeus of the females. The inner lobe of the maxillæ is produced into a sharp tooth. The fore tibiæ of the males are externally destitute of teeth,

and the four hind tibiæ in this sex are also without a central spine on the outside. The metasternal process is conically porrected, and at its extremity appears a slight channel, separating the scarcely visible portion of the mesosternum.

Mr. MacLeay in his observations on this group was unable to state whether plantulæ and pseudonychiæ exist in all the feet, in consequence of his specimens being mutilated. I may, therefore, mention that a rather strong plantula exists between the tarsal ungues of all the feet in both sexes, and that it is terminated by two or three very short bristles, which are often broken off, even in all the feet. In noticing the figures of the so-named Goliaths regius and princeps, Mr. MacLeay states that no allusion is made by their respective authors to the existence of plantulæ; although they are distinctly shown, both in Dr. Klug's and my figures, of those insects. The four posterior tibiæ in both sexes are fringed throughout the hinder margin with fine soft fulvous hairs, which in the middle feet are longest at the base; Mr. MacLeay also describes the males as having "the anterior tibiæ thus lined only half-way," which is not the case, the inside of these tibiæ having, at the base within, a patch of fulvous velvet-like plush of a texture totally unlike the long soft marginal hairs of the other feet; a similar patch, of the same texture, also existing at the base of the other tibiæ within.

It has been long observed that the Cetoniidæ, during flight, do not erect the elytra, but keep them horizontal, and I have observed a peculiarity in the structure of the scutellum, which has an evident effect in this peculiarity, each side of the scutellum being suddenly and deeply deflexed, which I have found (by the examination of individuals moistened in spirits of wine), forms a strong line of resistance against the sides of the inner margin of each elytron, when I have attempted to elevate them perpendicularly.

The species of this genus (as first restricted in Mr. Hope's 'Coleopterists' Manual' to the giant types of the family possessing the characters above mentioned), are peculiar to Western tropical Africa.

Species I.—*Goliathus giganteus*, Lamarck, Kirby, Westw., in Drury, Illust. Exot. Ent. vol. i. p. 61, (2nd Edit.) plate 31. Ditto (var.) Burm.

Syn.—*Scarabæus Goliathus*, Linn. Mantissa 530.
Cetonia Goliata, Fabricius. Ent. Syst. 1, 2, p. 124.
Cetonia Goliathus, Olivier.
Goliathus Africanus, De Lamarck.
Goliathus magnus, Duncan, in Naturalist's Library, Beetles, pl. 16.
Hegemon Goliatus, Harris, in 1st volume of the Journal of the Essex (U. S.) County Nat. Hist. Society.
Cetoninus (Goliathus) Drurii, MacLeay, (nec. Westw.).

This species still remains of the greatest rarity, the only known

individuals being the one in the Hunterian Museum, at Glasgow, and a second in the collection of Mr. MacLeay.

Species II.—*Goliathus Drurii*, Westw. in Drury, Illust. Exot. Ent., vol. iii. pl. 40, (2nd Edit.)
Hegemon Drurii, Harris.
Goliathus giganteus, MacLeay, (nec. Westw.)
Goliathus giganteus, Burmeister.

I have now seen so many specimens of the males of this species, in the collections of the Jardin des Plantes, Messrs. Hope, Melly, MacLeay, Raddon, and others, all of which agree together in their specific characters, that I have not the slightest hesitation in giving it as distinct from the preceding species, with which Dr. Burmeister still unites it. Had he however had an opportunity of comparing the two species side by side, as I have had in the collection of Mr. MacLeay, he would have no longer hesitated in admitting them to be distinct. The insect represented by Dr. Klug, in Erman's voyage, pl. 15, fig. 7, under the name of Goliathus regius, is evidently the female of this species.

It is unfortunate that Mr. MacLeay has reversed the specific names which I applied to the two preceding insects in my edition of Drury's Illustrations.

Species III.—*Goliathus Cacicus*, ♂ Voet. Col. 1, tab. 22, f. 151. Olivier, Gory and Percheron.
♀ *Goliathus princeps*, Hope, Col. Man. frontisp.

Of this fine species many specimens have, during the past summer, been received in England, by Mr. Hope, from Cape Palmas, on the western coast of tropical Africa, where they were collected by Mr. Savage, who thus notices their habits, in a letter forwarded to Mr. Hope:—"As to *Goliathus Cacicus*, these regions abound with them; and, after a year's watching, I have obtained the flower, and know botanically, the tree from which they derive their food. It is a syngenesious plant belonging to Jussieu's *Compositæ Corymbiferæ*. The Cacicus inhabits no other tree, as it is said. The *Mecynorhina torquata* inhabits two kinds of trees, one a magnificent Mimosa, a Goliath of its kind; I have not yet obtained the blossom; it is now in seed, which I have. The *Goliathus Drurii* is not found in the locality of Cape Palmas: it has been taken at Bussa, near Montserrado, and the specimen I now send is from Cape Coast." [The insect here alluded to is a splendid specimen of the insect figured in *Drury's 3rd volume*, or my G. Drurii.] "I lately saw Professor Klug's *Regius*, which is no more nor less than the female of *Drurii*. Of this I am as certain as that

the *Princeps* of Hope is the female of *Cacicus*. The *Gold* Coast would seem to be the locality of *Drurii*, andt he *Grain* Coast that of the *Torquatus* and *Cacicus*."

The tarsi of the males of this species are much more slender than in G. Drurii.

The largest specimen of the male of G. Cacicus which I have seen measures three inches and a half in length, including the horns of the head, whilst some are at least one-third shorter. The smallest female which I have seen measures two inches and a half in length, the elytra at the base being one inch and one-third in width. In some specimens of the female the two lateral fulvous marks on each side of the prothorax are united, and broader than in the specimen figured by me in Mr. Hope's Coleopterists' Manual, and in others the elytra have the pearly portion much more extended, leaving only a dark patch at each shoulder, and a large triangular basal spot extending half the length of the elytra.

Africa possesses, at least as far as known at present, no species analogous to the Asiatic genera,

Narycius and Cyphonocephalus, in having the sides of the head alone produced into horns, and the maxillæ multidentate.

Mycteristes and Phædimus, in having the front of the prothorax cornuted, and the maxillæ multidentate, or

Dicronocephalus, in having the prothorax broadest across the middle, with the maxillæ edentate.

We therefore now proceed with that section of the subfamily which possesses a trapezoidal prothorax, broadest at its hinder angles, and a simple terminal lobe to the maxillæ. The types of this group nearly rival in size the great Goliaths; they are, however, for the most part much more brilliantly coloured; the elytra are much broader at the base than behind; the body is very much depressed, and the prothorax has the posterior margin slightly emarginate in front of the scutellum. The fore-feet, in the males of this section, are considerably more elongated than in the opposite sex. The majority of the species of this section possess a short sternal process between the middle feet, and the species are at once distinguished from their Eastern analogues, by a peculiarity in the formation of the sternal process between the middle feet, which

has not been previously observed. In the African species, the anterior portion, or the apex of the mesosternal process, forms only the narrowed point at the extremity of the metasternal lobe, whereas in the Asiatic species the mesosternal portion is broader than the metasternal base of which it forms the apex, so that the process is generally clavate. (Compare, for example, Plate 30, fig. 1 *a*, with Plate 19, fig. 1 *c*).

In the Asiatic species, as will be seen from the short table given in page 132, and page 117, Jumnos takes the lead, with its long fore legs in the males which have the tibiæ internally serrated, in which respect we find it to agree, analogically, with the leading species of this section found in Africa, although differing materially in the structure of the clypeus, destitute of horns in the male, and the externally bidentate fore tibiæ of the males.

MECYNORHINA, *Hope* (Col. Man. 1. pp. 60, 119).

As at first proposed by Mr. Hope this group was intended to comprise G. micans, Daphnis, Grallii, &c. as well as its type Polyphemus. In the appendix, however, to the first part of his Coleopterist's Manual, he restricted it to G. Polyphemus, no description of the male of G. torquatus, nor even of the female of Polyphemus, having at that time been published. The characters assigned in p. 119 are "♂ Tibiæ anticæ dentibus utrinque armatæ; tibiæ intermediæ dente parvo medio armatæ," which are not applicable to the female.

Both Mr. MacLeay and Dr. Burmeister have divided the genus into two sub-sections. Those of Mr. MacLeay being thus characterized :—

1. ♂ Clypeus with *a single* porrected horn. *G. torquatus*, Drury.
2. ♂ Clypeus with three horns, the middle one diverging or bifid at the apex. *G. Polyphemus*, Fab.

Whilst Dr. Burmeister proposes (contrary to Mr. Hope's intention) to restrict the name of,

Mecynorhina, to G. torquata (the male having only a single horn to the clypeus, and the mando of the maxillæ destitute of a tooth, which exists in the female, and the female with only one spine in the middle of the intermediate tibiæ; and to give the name of,

Chelorrhina, to G. Polyphemus, with the character :—Head with a strong frontal horn, bifid at tip, and two moderately long lateral horns. Both sexes with a spine at the extremity of the mando, and the female with two spines in the middle of the intermediate tibiæ.

I do not consider it necessary to adopt these two divisions, the general characters of the two species being identical; the male of G. torquatus has, moreover, the sides of the head produced into a conical horn, which is analogous to the side horns of Polyphemus, and the bifid extremity of the middle horn in Polyphemus being, in my opinion, but a specific character. The second character employed by Dr. Burmeister, namely, the possession of a spine to the mando of the male Polyphemus (see Plate 44, fig. 3, drawn from a sketch sent me by Dr. Burmeister) would have been entitled to greater weight, were I not able to show similar instances of a difference in this respect existing between other species (E. G. Eudicella frontalis, Dicranorhina Burkei), whilst Dr. Burmeister's third character is certainly erroneous, as the females of both species agree in the toothing of the intermediate tibiæ.

The two species at present composing the genus form an admirable link between the gigantic species and those which follow, agreeing with the former in the singular velvet-like coat in which they are superficially clothed, as well as in their large size.

Species I.—*Mecynorhina Polyphemus*, ♂, Fabricius, Ent. Syst. 1, 2, 125; Oliv. Ent. 1, 6, 9, 3, T. 7 f. 61; Gory and Percb. Pl. 25, fig. 1; Arc. Ent. Pl. 19, fig. 1 *d*, and 1 *e*;—♀ Westw. Arc. Ent. p. 69, Pl. 19, fig. 1, 1 *a*, 1 *b*, 1 *c*.

Species II.—*Mecynorhina torquata* (Plate 44, fig. 1, ♂, 2 ♀); Drury Illust. Exot. Ent. 3, Pl. 44, fig. 1, ♀; Herbst Naturs. Kaf. 3, tab. 28, fig. 1; Waterhouse Mag. Nat. Hist. 2d Ser. p. 636, and fig. ♂
Cetonia collaris, Schönherr, Syn. Ins. 1, 3, 117.

It is to Joseph Hooker, Esq. (the son of Sir W. Hooker, the distinguished botanist), a most zealous Entomologist, whose attention had been particularly directed towards the Goliath beetles, and who is at present with the Expedition engaged in exploring the South Seas, that I am indebted for my first acquaintance with the male of this species, and which* is at present deposited at his father's residence at Kew, with his Entomological collection.

The magnificent male here figured is contained in the cabinet of A. Melly, Esq., of Liverpool, to whom I beg to offer my best thanks for the kind reception afforded both to Dr. Burmeister and myself during the visit of the former in this country. This specimen exceeds in size any other I have yet seen, and has the frontal horn of the head proportionately more developed, with a double series of black rounded tubercles towards the tip. In addition to this and Mr. Strachan's male specimen, a figure of which by the late

* This is the specimen to which Mr. MacLeay alludes as being probably a second individual of G. Polyphemus.

Mr. C. Curtis, was published by Mr. Waterhouse, I have seen several other specimens in the collection of the Rev. F. W. Hope, one of which measures as follows:—

Length of the head	6 lines.
„ prothorax	9 „
„ elytra	16 „
Breadth of hind part of prothorax	12½ „
„ base of elytra	13½ „

The female here figured is also contained in the splendid collection of Mr. Hope, having been brought from Sierra Leone by Mr. Strachan. Its measurements are as follow:—

Length of the head	4½ lines.
„ prothorax	8 „
„ elytra	17½ „
Breadth of the base of the elytra	13½ „

The male differs from every other Goliathideous insect in not having the frontal horn dilated at the tip; this sex possesses no tooth on the inner lobe of the maxilla (fig. 1 *a*), whereas it has a very strong one in the female (fig. 2 *a*); fig. 2 *b* represents the mentum of the female, and fig. 1 *b* and 1 *c*, the sternal process alike in both sexes, the apical mesosternal portion being much more developed than in the giant Goliaths. The fore posterior tibiæ in both sexes have their extremities produced into several acute spines independently of the calcariæ, which in the two posterior feet of the female are unequal in size, one of them being spatulate in form. The reason which induced Schönherr to change the name of this species to *C. collaris*, (which appears to have perplexed Mr. MacLeay, who by the bye cites both the name and reference of Schönherr incorrectly) was that there was another C. torquata described by Fabricius. As, however, Drury's name has a long priority it ought, even on these grounds, to have been retained.

As the species is entirely omitted in the "Monographie des Cétoines," I have represented both sexes in the accompanying plate.

CERATORHINA,* *Westwood.*

The following characters at once distinguish a most natural group of these insects:—Head of the males with the clypeus (and occasionally the hind part of the head) cornuted, simple in the females. —Fore-tibiæ of the males not dentated on the outside (occasionally spinose along the inner edge), those of the females internally simple, and externally 3-dentate. Middle tibiæ of the females with only one spine in the middle of the outer margin. Sternal process, with

the apical (mesosternal) portion, small, and not wider than the extremity of the metasternal portion.

Nearly every species in the group thus naturally associated is distinguished by splendid green or golden colours. This is, in fact, the case with all those which are natives of the tropics; but I have received, within the few last days, two species from Mr. Melly from a more southern latitude, both of which exhibit white velvet-like patches, and one of them is entirely destitute of metallic tints.

In the Coleopterist's Manual of Mr. Hope (vol. i, p. 119) a genus was proposed under the name of Dicronorhina, comprising Cetonia micans, Daphnis and Grallii, characterised by the internally spinose fore tibiæ of the males. As however several species are now known, (D. Nireus, Burkei, 4-maculata and guttata) the males of which possess unarmed fore tibiæ, I have considered it as likely to lead to less confusion by uniting them under a different generic name. The group now proposed, comprises Mr. MacLeay's sub-sections 3, 4, and 5 of the section 'Goliathi Smithii,' and his 4th sub-section of Coryphe Nariciæ, with several other species which must have been formed into other sub-sections according to his arrangement.

By Dr. Burmeister they are formed into the genus Dicronorrhina, and portion of Cœlorrhina, which are, as it appears to me, unnaturally placed in different sections of his family Goliathidæ.

They may be formed into several sections as follows:—

A. Tibiæ anticæ ♂ intus denticulatæ.
  a. Clypeus ♂ in cornu obtriangulare porrectus . . (1. *Dicronorhina*, Hope.)
  b. „ „ furcatum porrectus . . . (2. *Eudicella*, White).

B. Tibiæ anticæ intus haud dentatæ.
  a. Clypeus ♂ in cornu obtriangulare medium porrectus.
    α. Corpus haud metallicum, tarsi antici ♂ apice petticillato . . . . . (3. *Cheirolasia*, Westw.).
    β. Corpus metallicum tarsi antici haud penicillati.
      * Caput ♂ cornu postico armatum clypeus ♀ haud recte truncatus . . . . (4. *Taurhina*, Burm.).
      * * Caput ♂ haud cornu postico armatum; clypeus ♀ recte truncatus . . . . (5. *Cœlorrhina*, Burm.).
  b. Clypeus ♂ in cornua duo lateralia porrectus . . (6. *Stephanorrhina*, Burm.).

Section 1.—DICRONORHINA, *Hope.*

The first of these sections, which has for its type the typical species of Mr. Hope's genus Dicronorhina (a name altered by Dr. Burmeister to Dicranorrhina), namely the Cetonia micans of Drury, is further characterised by having the inner lobe of the maxillæ in both sexes destitute of a tooth, which is found, at least

in the females, of almost every other Goliathideous insect; the anterior tibiæ of the males are also externally destitute of any tooth, and the terminal joint of the anterior male tarsi is clothed beneath with a pencil of hairs. The four posterior tibiæ are not spined in the centre of the outer margin in the males, but in the females each of them has a single strong central spine.

Species I.—*C. micans.* Drury. Viridi-nitens, capite viridi quadrato maris lateribus unispinosis et in angulos obtusos nigros productis, medioque marginis antici in cornu nigro porrecto recurvo apice bifido producto. Long. corp. (e cap. ad anum, testo Drurio) $1\frac{7}{8}$ unc. (teste MacL. 25 lin.).

Syn.—*Scarab. micans.* Drury, vol. ii., tab. 32, fig. 3; MacL. Cet. So. Afr., p. 33; Fab. Ent. Syst. 2, p. 126, 5?

The description and figure of Drury disagree with the insect, now known to the majority of Entomologists under the name of Goliathus micans. Drury's description of the head is "green and nearly square; the surface irregular and uneven, the corners pointed, forming two black obtuse angles; from the front of the head issues a small black and thick protuberance like a horn, that divides into two branches, each of which terminates in a sharp point." Drury states that his specimen was received from Calabar, on the west coast of Africa, about 5° or 6° north latitude. In my priced copy of the catalogue of Drury's collection, I find that lot 112, comprising "Cetonia hamata, *nitens*, *grandis*, [torquata?] Scarabæus festivus, and 12 others," was purchased by Mr. MacLeay at the price of 17*l.* In the memoir on the Cetoniidæ of South Africa, Mr. MacLeay, quoting only Drury under G. micans, describes the male and female from his cabinet thus:—"Viridi-nitens antennis palpis tarsisque nigris, ♂ clypeo lateribus unispinosis, cornu medio porrecto recurvo, apice bifido; ♀ clypeo simplice *quadrato*."

It appears to me very doubtful whether the Fabrician description of C. micans can be intended to apply to this species.

Species II.—*C. cavifrons*, Westw., Viridi-nitens, capite ♂ supra nigro; lateribus acute dilatatis parteque postica viridibus; clypeo valde excavato, antice 3-corni cornubus lateralibus brevibus truncatis; intermedio haud recurvo apice dilatato bifido; margine antico clypei in ♀ sub 3-sinuato. Long. corp ♂ (in spec. nostr. cornu clypei incluso) $1\frac{7}{8}$ unc.; ♀ $1\frac{3}{8}$ unc.

Syn.—*Goliathus micans*, Gory and Percheron, Mon. des Cet. pl. 25, fig. 2; Guérin, Icon. R. An. Ins. pl. 26, fig. 5; Burmeister Handb. d. Ent. Lamellic 1, p. 188.

This insect is now widely distributed in collections under the name of Goliathus micans, having been received from the French collectors at Senegal in considerable numbers. The structure of the head is however quite unlike that of C. micans. Mr. Strachan has also brought it from Sierra Leone, his specimen being the insect

alluded to by Mr. MacLeay, in his observations on C. micans, and which (ante p. 6), I stated to be identical with C. micans, knowing only the species so named and figured by modern French authors, Mr. MacLeay himself not having alluded to any difference between the figures of Drury and Guérin.

Species III.—*C. splendens.* M'L. Viridi-nitens, thorace punctis duobus cæruleis, elytris vix striatis lineâ obliqua humerali cæruleâ; clypeo ♂ lateribus bispinosis cornu medio porrecto recurvo apice bifido. Long. corp. lin. 24.

Mr. MacLeay adds, "It is a species which comes very close to C. micans, and belongs to the same section."

The above is all the description given by Mr. MacLeay of this species, of which he gives no habitat; so that we are left in doubt whether it be a native of South Africa, or not.

Species IV.—*C. Derbyana.* Molly's MS. Plate 42. Viridis nitidissimus, clypeo porrecto elytrisque albido-marginatis, capite nigro, ♂ cornubus duobus elevatis inter oculos, cornuque antico subrecurvo; apice obtriangulari, ♀ clypei margine antico sub 3-sinuato. Long. corp. ♂ (cornu clypei excl.) $1\frac{1}{2}$ unc. ♀ $\frac{15}{16}$ unc.

The general colour of this splendid insect is a shining green with a bluish tinge. The head of the male above is black, except at the hinder part, which is green, and a large patch on each side of the central carina, covered with whitish velvety tomentosity. The front margin of the clypeus is nearly square, there being behind each of the anterior lateral angles an acute prominence, whence the head is gradually narrowed to the base of the antennæ. The sides of the head are not elevated, but there are two horns elevated and obtuse between the eyes, standing out obliquely. (In C. cavifrons these horns are not distinct, but are confluent with the sides of the head, forming a very deep excavation on each side of the central carina). Along the middle of the head runs an elevated carina extending to the extremity of the central horn of the clypeus, which is rather recurved, with the sides angularly dilated. The underside of the head, together with the trophi and antennæ, are also black. The disk of the prothorax is very finely punctured. The sides with a very slight margin, and with a rather broad lateral band (gradually narrowed towards the hind angles) covered with whitish tomentosity. The elytra are similar in colour to the prothorax but rather more distinctly punctured, the punctures occasionally forming longitudinal lines. At each shoulder and subapical tubercle is a black patch; the tomentose marginal band ascends to a considerable distance along the suture, breaking into small spots. The fore tibiæ have several (seven or eight) teeth along their inner

margin. The basal joints of the tarsi are terminated by a small point; and the last joint on the fore tarsi is furnished beneath with a small tuft of black hairs. The tibiæ are chalybæous or æneous black, and the tarsi black. The body beneath is of a dark shining olivaceous green. The femora and sides of the metasternum tinged with coppery red: the third, fourth, and fifth segments of the abdomen are marked on each side with a white spot; and the podex has a transverse patch of white at the base.

The female is similarly coloured, but rather darker, and with the punctures very close and strong, especially on the prothorax, with an interrupted narrow line along the middle, partially free from punctures: the sides and anterior margin of the head are elevated and black, as are also the tibiæ and tarsi. The abdomen of the male presents only a slightly depressed and very slender line along the middle of the three or four basal segments; and the extremity is more pointed than in the female. The sternal process is but slightly porrected, with a very small portion only of the mesosternal portion visible in front (pl. 42, fig. 1 *b* 1 *c*). The basal lobe of the maxillæ is destitute of a spine in both sexes (fig. 1 *a*), and the terminal joint of the maxillary palpi is somewhat longer in the male than in the female (fig. 2 *a*).

I have to return my best thanks to Mr. Melly for an opportunity of describing and figuring this new and beautiful species, as well as several other interesting novelties, which will appear in the next number of this work, recently arrived in this country, having been collected by Mr. Burton in the hilly and hitherto unknown country lying between 25 and 26° S. lat. and 27 and 28° E. long. The specimens of the present species were taken on the trunks of a tree named Zizyphus; they flew exceedingly fast, and only those specimens were taken which were found in pairs. Mr. Melly has proposed to name the species in honour of the Earl of Derby, President of the Zoological Society; and I have much pleasure in adopting his suggestion.

Section 2.—EUDICELLA. *White.*

This section is distinguished by the forked central horn of the clypeus of the males; the anterior male tibiæ simple externally, but denticulated within; the terminal joint of the fore tarsi, in the same sex, not furnished with a brush of hairs; the broader mentum and shorter scutellum: together with the strongly dentate inner lobe of

the maxillæ of the females, the same part being either simple or less strongly dentate in the males. Hitherto no species has been found which has not the superficies of the body of a shining green, or glossed with a fulvous tint, no trace of tomentosity occurring in the species. The females have the hind part of the prothorax and base of the elytra considerably dilated, and the tarsi, in all the known species, are black. The female has the front margin of the head nearly straight, with it and the sides margined.

Species I. (V.)—*Ceratorhina* (*E.*) *Daphnis*, Buquet, Ann. Soc. Ent. de France, 1835 (tom. IV.) pl. 2, fig. 3, 4.
Inhabits Senegal.

Mr. Melly possesses a specimen exactly agreeing with M. Buquet's description; in which the frontal horn, when seen in perspective from above, appears to have the two branches curved at the tips; but when seen of their proper form from behind, they are nearly straight, like those of C. Morgani. I mention this because Mr. MacLeay (judging only from M. Buquet's figure) gives as one of the characters distinguishing it from C. Smithii, "ramis extus arcuatis," which is not the case.

Species II. (VI.)—*Ceratorhina* (*E.*) *Smithii*, MacLeay, Cet. of South Africa, p. 34, pl. 1, fig. med.

Taken by Dr. Smith in Africa, near the Tropic of Capricorn.

Species III. (VII.)—*Ceratorhina* (*E.*) *Morgani*. (Plate 43, fig. 3 ♂, 4 ♀). White in Mag. Nat. Hist. N. S. 1839, p. 24.

The accompanying figures are made from beautiful specimens in the collection of the Rev. F. W. Hope, natives of Sierra Leone. They are of an intense uniform shining green colour, without any spots on the elytra by which they are distinguished from the other species; with the forks of the horn of the head nearly straight and diverging. The female is very broad across the base of the elytra, which, as well as in the male, are considerably more attenuated towards the tip, than in the other species represented in the plate. Fig. 3 *a* represents the side view of the head, and 3 *b* the apex of the horn seen from behind; 3 *c* the mandible, 3 *d* the maxilla of the male; 4 *a* that of the female; 3 *e* the mentum of the male (that of the other sex not being quite so broad nor so deeply channelled in the middle, the labial palpi being thicker in the female); 3 *f* and 3 *g* the sternal process, alike in both sexes.

Species IV. (VIII.)—*Ceratorhina* (*E.*) *frontalis*, Westw. (Plate 43, fig. 1 ♂, 2 ♀).

Syn.—*Eudicella frontalis*, Westw. in Taylor's Phil. Mag., Nov. 1841. Læte viridis nitidissima, subaurata, capite ♂ tricorni, cornu medio fulvo capite paullo longiori basi crasso, ante medium in ramos duos subparallelos lateribus externis serrulatis apiceque recurvis; elytris disco lateribusque fulvo tinctis maculis duabus humeralibus alterisque, duabus subapicalibus nigris, clava antennarum fulva, ♀ clypeo antico fere recto fulvo.

Long. Corp. ♂ (excl. cornu capitis) lin. 17. ♀ lin. 16.

Inhabits the Gold Coast.

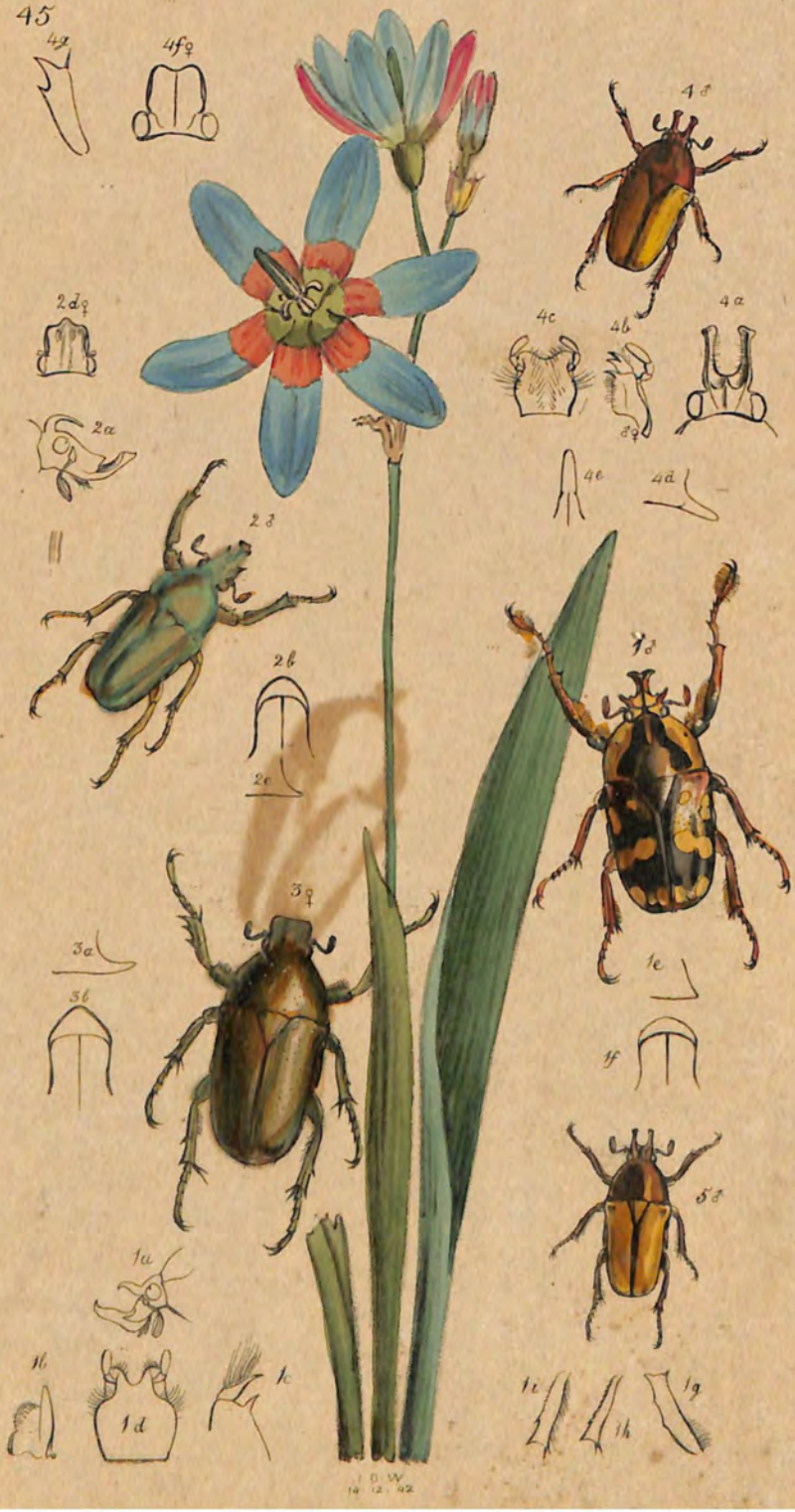
Both sexes of this beautiful species are in the collection of Mr. Turner of Manchester, who kindly forwarded them, and numerous other rarities, to Liverpool, for the examination of Dr. Burmeister and myself during our visit to the latter city. The prothorax and elytra in both sexes are most delicately punctured; the suture, and a broad stripe down the sides of the latter, of a splendid green, the other parts of the elytra being stained with fulvous. The front of the head of the male is bright fulvous, the extreme tips of the lateral horns black. On the underside, the male is of a splendid golden green, the femora with a dorsal stripe of bright red, the tibiæ above green, beneath black, as well as the tarsi; underside of the front of the head and horn rich brown the latter tinged with green; the abdomen deeply impressed in the centre, the impressed part bright fulvous red; clava of antennæ fulvous. Abdomen of female beneath concolorous, with the rest of the underside of the body. Sides of metasternum and of abdomen thickly punctured. Figure 1 *a* represents the side view of the head; 1 *b* the horns seen from behind; 1 *c* the maxilla of the male (*the inner lobe in both maxillæ terminated by a short tooth*); 2 *a*, the extremity of the maxilla of the female, with a stronger tooth.

Species V. (IX.)—*Ceratorhina* (*E.*) *Gralhii*, Buquet in Ann. Soc. Ent. de France, 1836, (Tom. v.) p. 201, Pl. 5, fig. 3.

Supposed by M. Buquet to be a native of Western Africa.

Species VI. (X.)—*Ceratorhina* (*E.*) *ignita*, Westw. (The description and figure of which will appear in the following Number).

The plant represented in Plate 42, is the Babiana villosa, a bulbous native of South Africa; and that in Plate 43 is the singular Orchidaceous Bulbophyllum saltatorium Lindl. from Sierra Leone.


45
4g
4fg
4d
2dg
4c
4b
4a
2a
3g
4e
4d
2d
2b
2c
3d
3g
3a
3b
1e
1f
5d
1a
1b
1d
1c
1i
1h
1g

6
6a
2♂
6c
6b
2a
3♂
2♂
3b
3a
1♂
1a
1c
1b
1e
1d
4♂
5♀
5a
5b
5d
5e
4d
4c
4a
4b

PLATES XLV AND XLVI.

ON THE GOLIATHIDEOUS CETONIIDÆ OF AFRICA.

PART II.

CERATORHINA (EUDICELLA) IGNITA. *Westw.*

(Plate 46, fig. 1. ♂.)

C. (E.) viridis, cupreo-micans, capite ♂ tricorni, cornu medio capite plus duplo longiori porrecto recurvo, bifido, luteo-brunneo ramis divergentibus apice tuberculatis, elytris concoloribus immaculatis, tibiis castaneis tarsis antennisque nigris. Long. Corp. (exclus. cornu capitis) lin. 17¼. Lat. ad basin elytrorum, lin. 8⅝.

Habitat in Africa tropicali. Gold coast. In mus. D. Raddon.

Considerably larger than any of the other species of Eudicella, the male having the upper surface of the body of a splendid opaline green, strongly tinged with coppery orange; the insect when held towards the light appearing entirely green, while when held from it, it appears of a rich coppery red.

The head has less of the coppery hue, it is almost flat above and nearly quadrate; it is closely punctured, the punctures being quite visible to the naked eye. From the base of each antenna runs a sinuated dark slender impression, almost parallel with the inner margin of the eye; the anterior angles of the head are produced into a short diverging spine, directed upwards, of a brown colour, black at the extreme tip, and obliquely truncate within. Between each of these spines and the middle of the head is a deep oval impression of a green colour. The space between these two impressions is occupied by a triangular brown patch running backwards from the middle of the front of the head, which is produced into a long luteous-brown horn, the base of which is darker reddish brown, and nearly straight, being elevated in a slight curve, at the extremity of which the horn is divided into two branches, which follow the curve of the basal part, each terminating in a point, behind which are several (three or four) black tubercles; the furcation of these two branches forming a regular curve when seen from behind. The entire horn is more than double the length of the head. (Fig. 1 *a*, 1 *b*, 1 *c*, the horn seen in different positions.) The eyes and the antennæ are black, the palpi pitchy, the maxillary being paler than the labial.

The pronotum is, at the hind part, half as broad again as it is long, and is very finely and closely punctured, especially at the sides and fore-angles, the punctures being scarcely visible to the naked eye; it is slightly dilated in the middle of the sides, which have slender thickened margins. Near the base of the scutellum are two slight impressions. The scutellum and elytra are covered with excessively fine punctures not visible to the naked eye; the latter has two lines of deeper punctures running along the sides of the suture. This is elevated at the extremity of the elytra, where it has a slender black margin and terminates in two points. The sides of the elytra are concolorous, the middle of the raised humoral part appearing rather darker, but not in the least marked with the black spot observable in the other species. The base of the elytra is rather broader than the hind part of the thorax. The elytra are one fourth longer than broad. The underside of the body is green tinged with coppery orange, especially across the middle of the metasternum; this has a dark longitudinal line in the centre, and the sides are thickly punctured. The underside of the femora are marked with minute slender dark oblique striæ; the femora on the upper side are entirely castaneous red; the anterior with a thick coating of hairs along the edge. The tibiæ are castaneous brown, very slightly tinged with green; the anterior curved and irregularly dentate along the inner edge. The teeth, spines, and tarsi are black; the tibiæ beneath are dark brown. The anterior extremity of the metasternum is green, whilst the base of the mesosternum is coppery, (fig. 1 *d*, 1 *e*, sternal process). The abdomen beneath is green, with the slender margins of the segments dark brown. The centre of the abdomen has a deep impression, which is dark along the middle.

Section 3.—CHEIROLASIA. *Westwood.*

This section is distinguished by the anterior tibiæ of the males being destitute of the serrations which so singularly arm those of the preceding sections. The apex of the anterior femora, and the base of the tibiæ are, however, clothed with a thick coat of fulvous hairs, of which also a broad brush ornaments the apical joint of the fore tarsi. The head of the males is armed on each side, in front of the eyes, with a porrected horn; and the middle of the clypeus is produced into a thick horn, dilated and very slightly bifid at the tip. The sides of the front of the clypeus are also pointed. The body is comparatively short and broad, destitute of metallic colours, but marked with pale pubescent patches. The mandibles have the blade slender and rather acute (Pl. 45, fig. 1 *b*). The maxillæ have the basal lobe produced into an acute spine; and the apical lobe is also very acute (fig. 1 *c*, both maxillæ being alike). The mentum has the fore margin deeply cleft (fig. 1 *d*). The sternal process is broad, obtuse, and but slightly porrected (fig. 1 *e* and 1 *f*).

Species I. (XI.)—*Ceratorhina* (*Cheirolasia*) *Burkei.* Molly's MS. (Plate 45, fig. 1). Nigra nitida, capite, prothoracis lateribus maculis elytrorum, corporeque subtus albida pubescentia obsitis, tibiis posticis tarsisque omnibus fulvis ♂. Long. corp. lin. 12—14 (cornu capitis incluso).

Habitat in Africa australiori. D. Burton.

This is one of the fine new species collected by Mr. Burton in Southern Africa (see p. 174), for a knowledge of which I am indebted to A. Molly, Esq. The head is fulvo-castaneous, the edges of the large frontal horn and the tips of the two short ones at the fore angle of the clypeus black, the hind part of the head black, with two large triangular patches of pale pubescence, of which there is also a large one on each side of the carina, running to the middle of the frontal horn, where it forks, and extends to the tip of each branch; the horns in front of the eyes are fulvo-castaneous, the antennæ fulvous, the underside of the head and trophi fulvo-castaneous. The prothorax has its upper surface marked on each side with a broad band of pale pubescence, in which is a small dark dot; this pubescence extends narrowly along the fore margin of the prothorax, from the middle of which it is extended backwards in a narrow line to the middle of the disk. Within each pale band is a sooty-black opaque one, the space enclosed within which and the hind margin is very bright, with a few very minute punctures. The elytra are black and shining, with a slight pitchy tinge, the base and extreme apex being bright castaneous; they are marked with a variable number of impressed patches of pale pubescence, which become more or less confluent in different individuals. The disc is slightly and very minutely punctured. The pedex is castaneous, with a large white spot on each side. The fore legs are elongated; the femora castaneo-fulvous, with the tips black; the anterior ones thickly clothed within with fulvous hairs; the fore tibiæ black, with the tips fulvous, which is also the colour of the dense patch of hairs within, at the base; the outer margin presents the slightest possible indications of an approach to the common tridentate structure, in the existence of two slight sinuations; the tarsi are long, with the joints produced acutely at the tips within, the terminal joint rather broad and thickly clothed with fulvous hairs; the four posterior tibiæ are fulvous, with the base beneath black; the tarsi are also fulvous; they are slightly serrated along the outer margin; each of the four posterior tibiæ is furnished with two rather short spurs; and there is a very minute bisetose appendage between the ungues of each foot. The metasternum is black, with the sides covered with pale pubescence, as are also the posterior coxæ; the abdomen black, with two rows of large pale patches down the middle, and several smaller spots on each side. It is very slightly channelled down the three

basal segments. The smaller specimen sent me by Mr. Melly had the horns of the head rather shorter, the spots of the elytra more confluent, the four hind legs entirely fulvous, the anterior tibiæ with the sinuations more distinctly marked so as to give them more the appearance of being tridentate (fig. 1 *g*), and the four hind tibiæ more serrated (fig. 1 *h*, 1 *i*). The maxillæ in this specimen were of a similar form to those of the larger specimen figured in the plate.

SECTION 4.—TAURHINA, *Burmeister*.

This section is distinguished from the last by its splendid metallic colour and by its fore tarsi being destitute of an apical brush, and from the following by having the hind part of the head, in the males, produced into a broad curved horn (pl. 45, fig. 2 *a*), whilst the centre of the front margin of the clypeus is porrected in the shape of a thick obtriangular horn; the front of the clypeus of the female (pl. 45, fig. 2 *d*, from Schaum) is not straight. The inner lobe of the maxillæ is simple in the males: (I have not seen a female in nature). The anterior femora and tibiæ, in the males, are singularly constructed, evincing an approximation to the internally serrated tibiæ of some of the preceding species. The sternal process is broad and somewhat triangular at the tip, which is more porrected than in the last group (fig. 2 *b*, 2 *c*). The abdomen is channelled beneath, and the pseudonychiæ are distinct but very minute, the unguiculæ being scarcely visible.

SPECIES I. (XII.)—*Ceratorhina* (*T.*) *Nireus* (Plate 45, fig. 2.)
SYN.—*Dicranorhina Nireus*, Schaum. Anal. Ent., p. 40, tab. annex. ♂ ♀. Burmeister, Handb. d. Ent., Vol. 3, p. 190.

This beautiful species inhabits Guinea. The only specimen I have yet seen is in the collection of Captain Parry of Cheltenham, who has kindly permitted me to illustrate it in this work.

SECTION 5.—CŒLORRHINA, *Burmeister*.

The type of this section exhibits equally splendid colours with Taurhina, from which it differs in the armature of the head of the male, which is thus described by Mr. MacLeay, who, I believe, alone possesses this sex:—"Clypeo antice concavo, cornu medio brevi recurvo, apice dentato, triangulum obversum simulante." He also describes the anterior tibiæ as having no teeth externally or internally. The female has the head unarmed, with the front margin of the clypeus slightly emarginated; the inner lobe of the maxillæ is strongly toothed; the front margin of the mentum is deeply incised; the anterior tibiæ are tridentate, and the four posterior ones have a tooth on the outside, beyond the middle. The sternal process is of the same form as represented in pl. 45, fig. 3 *a*, 3 *b*.

Species I. (XIII.)—*Ceratorhina* (*C.*) 4-*maculata*.
Syn.—*Cetonia* 4-*maculata*, Fabricius. Olivier. Gory and Perch., Mon. 131, 4 pl. 19, fig. 4. MacLeay. Burmeister, H. d. E., iii. p. 207.

The typical specimen of this insect, described by Fabricius from the Banksian Cabinet, is still in that collection at the Linnæan Society, being a female.

Species II. (XIV.)—*Ceratorhina* (*Cælorrhina*?) *aurata*, Westw. (Plate 45, fig. 3). Læte viridi-aurea, antennis et clypei marginibus nigris, hujus margine antico ♀ lato ferè recto; elytris maculis duabus parvis triangularibus humeralibus alterisque duabus apicalibus nigris, marginibus fulvo-aureis; tibiis tarsisque aureo-viridibus ♀. Long. corp. lin. 16¾. Lat. ad basin elytr. lin. 8.
Syn.—*Goliath.* (*Eud.*) *auratus*, Westw. Ann. of Nat. Hist., Nov. 1841.
Cælorrhina aurata, Burmeister, H. d. E., iii. p. 208.
Inhabits the shores of the Cammeroons River, in Western Tropical Africa. In the Cabinet of J. Turner, Esq. of Manchester.

I am unfortunately unacquainted with the male of this species, and am therefore unable to determine the precise group to which it belongs, placing it here provisionally, since it differs from the Eudicellæ and Cœlorrhina 4-maculata in the broader shape of its clypeus and *green* tarsi, although agreeing with the latter insect in a narrower form than that of the female Eudicellæ, as well as in the narrowed shape of the mentum. It agrees with Taurhina Nireus ♀ in possessing green tarsi, but differs in the truncature of its clypeus.

The general colour of this insect is a rich golden-green. The hind part of the prothorax and the suture and margins of the elytra more fulvous. The clypeus is very much punctured; its margin and the antennæ and palpi black. The maxillæ in the female have both lobes armed with an acute tooth. The elytra have a small black triangular patch at each shoulder, and a black spot near the tip of each. The suture is also black at the tip. The feet are golden-green; the femora above are fulvous golden-green; whilst the tibiæ and tarsi are green-golden, with the ungues black. The podex is green, with numerous black transverse-indented striolæ. The body beneath is of a richer golden-green, with the legs and tarsi green, the femora fulvous-green on the upper edge, the clypeus beneath green with the margin black. The sides of the metasternum and of the abdominal segments are much punctured; the middle of the metasternum with a red line. The sternal process is broad, with the apex subtriangular (fig. 3 *a*, 3 *b*).

Section 6.—STEPHANORRHINA, *Burmeister*.

This section (which Dr. Burmeister has regarded as congeneric with C. 4-maculata and simillima) is distinguished by the anterior tibiæ of the males being simple in both margins, and by the head of the same sex having an obconical horn on the front of the forehead, and the anterior angles of the clypeus elongated into porrected horns. The sternal process is very similar in form to that of C. aurata (pl. 45, fig. 3 *a*, 3 *b*). The female has the head simple, the clypeus slightly emarginate, and the anterior tibiæ 3-dentate. The elytra are carinated and marked with numerous white pubescent spots.

Species I. (XV.)—*Ceratorhina* (*S.*) *guttata*, Olivier, Gory and Percheron, pl. 22, fig. 6 ♀. Buquet, in Annales Soc. Ent. France, t. 5, pl. 5, B. f. 4 ♂.

The locality of this species has been the subject of much confusion, Olivier cites South America, Gory and Perchéron give China as its probable habitat, whilst Mr. MacLeay (Cet. Soc. Afr. p. 29, 30), introduces it into his Indian group named Nariciæ. It is, however, a native of Guinea and the neighbouring parts of Africa.

TMESORRHINA, *Westwood.*

The description of this genus will be found in a preceding page (71). The genus is here restricted to two species, from a consideration of the structural peculiarities alluded to in page 108.

Species I.—*Tm. concolor.* Plate 19, fig. 3, and details. Dr. Burmeister as well as myself have regarded the Schizorhina Thoreyi of Schaum (Anal. Ent. p. 42) as the male of this species.

Species II.—*Tm. Iris.* Fabricius, Olivier, Westw. ante, p. 107.
Syn. *Tm. amabilis*, ante, pl. 19, fig. 2.

Both sexes of this tropical African species are now in the collection of the Rev. F. W. Hope. The female is contained in the Banksian Cabinet. The habitat Surinam, given to the species by Fabricius, is altogether erroneous.

APHELORRHINA, *Westwood.*

This generic name is now proposed for the insect represented in plate 19, fig. 4, under the name of Tmesorrhina simillima, of which I am acquainted only with the male, in which sex the head is unarmed, with the front margin of the clypeus slightly emarginate, the fore-legs long and simple; the sternal process long, porrected, with the apex slightly bent upwards; the apical mesosternal portion narrower than the basal metasternal part, and subtriangularly elongated. The elytra are marked with numerous white pubescent spots, and the maxillæ have the inner lobe obtuse and the outer one entire.

Species I.—*Aphelorrhina simillima.* Plate 19, fig. 14, and pages 72 and 108 ♂.

DYMUSIA, *Burmeister.*

The head in both sexes is unarmed, and the clypeus deeply emarginate. The maxillæ have the basal lobe obtuse in both sexes, and the apical one very acute. The mentum is very deeply emarginate. The sternal process is elongated; the apical mesosternal part narrower than the base and rounded off at the tip. The fore-

legs in the male are scarcely longer than in the females, with the tibiæ bidentate at the tip, those of the females being 3-dentate. The elytra are terminated by two sutural spines, the disc being more or less marked with white dots.

Species I.—*Dymusia cyanea.* Burmeister, Olivier, (Cetonia *c.*) Gory and Perchéron (Schizorhina *c.*) pl. 27, fig. 6.

Species II.—*Dymusia punctata.* Burmeister, Schonherr, Syn. 1, 3, App. p. 52. (Cetonia *p.*).

Syn.—*Schizorhina Swartzii,* Schaum Anal. Ent. p. 43.

BOTHRORRHINA, *Burmeister.*

By an accident, the typical species of this group was illustrated by me in a previous Number (p. 126) under the name of Plæsiorrhina, a name given by Dr. Burmeister to a different (subsequently mentioned) group. It comprises two species, natives of Madagascar, of great rarity.

Species I.—*Bothrorrhina reflexa,* Burmeister.

Syn.—*Cetonia* (*Goliath*) *reflexa,* Gory and Perchéron, op. cit. supr.

Plæsiorrhina reflexa, ante, p. 126, and plate 32, fig. 1 and details.

Species II.—*Bothrorrhina ochreata,* Burmeister, Gory and Perchéron (op. cit. sup. C. G. ochr.).

CHORDODERA, *Burmeister.*

This group has the front of the head in the males produced into a short straight truncated horn, with another flat deflexed truncated horn arising between the eyes; the female has the middle of the front margin of the clypeus slightly elevated, and an acute triangular horn arising between the eyes. The maxillæ have the inner lobe acutely pointed. The mentum is rather deeply emarginate. The fore tibiæ are tridentate in both sexes. The sternal process is but very slightly porrected, and dilated into a short round lobe in front. The colours are obscure, the thorax with lines, and the elytra with spots of pale pubescence. The species are from tropical Africa.

Species I. — *Chordodera 5-lineata,* Burmeister, Handb. d. Ent. 3, 203, Fabricius, Olivier 1, 6, 33, f. 76, (Cetonia 5-*l.*).

Species II.—*Chordodera pentachordia,* Burmeister, Klug in Erman's Reise, t. 15, f. 9. (Ceton. *p.*).

PLÆSIORRHINA, *Burmeister* (nec. Westw. ante, p. 126).

This genus is remarkable rather on account of its non-possession of striking characters distinctive of the opposite sexes; thus, the head is simple, with the clypeus nearly straight in both sexes. The maxillæ also have both the lobes unarmed. The fore tibiæ are nearly alike in both sexes, and destitute of teeth on the outside*.

* D. Schaum has erroneously assigned the character of tridentate tibiæ in both sexes to this group. Anal. Ent. p. 42.

The mentum with the front margin nearly straight. The sternal process long, narrow, rather acute at the tip, and bent upwards.

Species I.—*Plæsiorrhina depressa*, Burmeister; Gory and Perchéron pl. 21, fig. 1, (Gnathocera *d.*).
Syn.—*Gn. Cleryi*, Dej. Cat.; and *Gn. tristis*, Buquet.

Species II.—*Plæsiorrhina cinota*, Burmeister; Voet, Olivier, Herbst, Schonherr (Cetonia *c.*).
Syn.—*Cetonia tænia*, Pal. Beauv.; Gory and Perchéron, pl. 21, fig. 4.

Species III.—*Plæsiorrhina plana*, Burmeister; Wiedemann, Germar Mag. 4, 145, (Cet. *p.*).
Syn.—*Coryphe Herschelii*, MacLeay, Cet. Soc. Afr., p. 31.

Species IV.—*Plæsiorrhina mediana*, Westw. Plate 46, fig. 2. Supra nigra, pronoti lateribus fasciaque tenui mediana elytrorum corporeque subtus cum femoribus fulvis. Long. corp. lin. 8. Inhabits Cape Palmas, Mr. Savage. In the collection of the Rev. F. W. Hope.

The upper surface is black, moderately shining, and very delicately punctured; the front margin of the clypeus is very slightly emarginate; the prothorax has a very slender yellow margin on each side, within which the disc is obliquely strigose; the elytra are black and depressed, with a slender, nearly straight, fulvous transverse fascia, interrupted by the suture; the epimera are fulvous; the podex black, with a fulvous patch on each side; the underside of the body entirely fulvous (except a slight dash of black at the base of the abdominal segments, on each side); the femora are fulvous, and the tibiæ and tarsi black.

Species V.—*Plæsiorrhina abbreviata*, Burmeister, Fabricius, (Cetonia *a.*)
Syn.—*Gnathocera flavo-succincta*, Gory and Perchéron, pl. 22, fig. 2.

This species varies greatly in the colour of the prothorax, which in some specimens is entirely black, in others entirely red, and in some is red with a very large black discoidal patch. All these varieties are contained in the collection of the Rev. F. W. Hope, the first being labelled with the name of "Cingulata Gory," and from Guinea. Burmeister, however, describes that species (H—b. d. Ent. p. 561,) under the genus Anochilia, and as a native of Madagascar.

HETERORHINA, *Westwood*, ante, p. 132.

The great diversity in the armature of the head of the males in the species associated under this group, appears to me to be a sufficient proof of the comparative unimportance of such a character for the establishment of genera to be founded thereupon. Dr. Burmeister, in his Handbuch der Entomologie, III., p. 216 et seq., has, on the contrary, not only adopted the genus Diceros as distinct from the group which he calls Coryphocera (comprising most of my Heterorhinæ), but has also raised the Gnathocera MacLeay, of Gory and Perchéron (my Heterorhina dives), to the rank of a genus, under the name of Mystroceros Diardi, whilst he has sunk the Trigonophori into a section of his Coryphocera. In the appendix to his volume, p. 790, he has reduced Mystroceros to a species of Diceros. The opinion, however, which I formerly expressed

respecting the unity of these groups, has been more strongly confirmed by the examination of the new species represented in plate xlv., figs. 4 and 5, which present another diversity in the armature of the head, accompanied by an equally marked difference in the maxillæ and fore tibiæ, which would render it as unnatural to unite them into a genus with Diceros bicornis as it is to unite Heterorhina dives (Gn. MacLeay, G. and P.) with them; the general habit of the last-named species agreeing with that of the true Cetonia MacLeaii, of Kirby.

The following are the African species of this group:—

Species I.—*Heterorhina Africana*, Drury (Scar. Afr.) Fabricius, Olivier, Gory and Perchéron, pl. 19, fig. 6.
Syn.—*Scarab. ærugineus*, Voet.
?—*Scarab. pyropus*, Voet.) An Syn. Het. læta?

Species II.—*Heterorhina viridi-cyanea*, Pal. Beauv. Ins. pl. 5, fig. 5. Gory and Perch. pl. 21, fig. 2.
Syn.—*Cet. Stigma*, Pal. Beauv. pl. 5, fig. 4 (variety).

Note.—The Rev. F. W. Hope informs me that the insect represented in my plate 35, fig. 4, p. 138, is a native of Africa, in which case I apprehend it, like C. stigma, is a variety of this species. Messrs. Gory and Perchéron have confused the two African and Indian allied species under the name of Gnathocera elegans.

Species III.—*Heterorhina monoceros*, Gory and Perch. Mon. Cet. pl. 21, fig. 3. Burm. Handb. 3, p. 232.

Species IV.—*Heterorhina suturalis*, Fabricius, Olivier, Gory and Perch. Mon. pl. 21, fig. 6.

The original specimen of this species described by Fabricius, is in the Banksian Cabinet, being a female. It has the fore tibiæ rather more strongly bidentate than the male. A male insect of this species is contained in the cabinet of the British Museum, marked as a new species. Having compared the drawing of it (which I made with the view of figuring it in this work) with the original Banksian specimen, I find them specifically identical.

Species V.—*Heterorhina Algoensis*, Melly's MSS. (Plate 45, fig. 4.) Luteo-fulva, pronoti maculis duabus, alterisque duabus minoribus humeralibus nigris, elytris flavis, abdomineque nigro, hujus apice rufo; capite ♂ bicornuto. ♂ ♀. Long. corp. lin. 9—10.
Inhabits the south-eastern part of Africa. In the collection of A. Melly, Esq.

The head of the male (Pl. 45, fig. 4 *a*,) has the anterior angles of the clypeus produced into two long porrected, nearly straight, horns, with the apex obliquely truncated, the inside of each being rather concave and hairy. The disc of the head is also armed with a short triangular deflexed spine; the head, pronotum, scutellum, suture of the elytra, epimera, posterior coxæ, femora, tibiæ, podex, sternal spine, and centre of the metasternum, are fulvous red and very shining. The tips of the horns of the head, the eyes, club of the antennæ, patches on the pronotum, and humeral spots, black; the tarsi pitchy; the sides of the metasternum strongly punctured; the abdomen black and shining, with the apex red. The elytra are very slightly punctate-striate. The maxillæ in this sex (fig. 4 *b*) are bidentate, both being alike; the mentum is emarginate in front (fig. 4 *c*). The anterior tibiæ have the slightest possible indication of a tooth on the outside, towards the apex, which is very acute, the four posterior tibiæ are furnished with a spine in the middle; the unguiculæ are minute but distinct; the sternal process is long, narrow, straight, and deflexed (fig. 4 *d*, 4 *e*). The female differs, in having the head

simple, with the front margin of the clypeus emarginate (fig. 4 *f*); the anterior tibiæ strongly bidentate (fig. 4 *g*, in which respect it differs from all the other African Goliath beetles); and I observed that one of the maxillæ had the apical lobe bidentate, whilst it was simple in the other maxilla. It is similarly coloured to the male, except that the red is less bright, and the sides of the posterior coxæ are less broadly marked with red, and the antennæ have the clubs pitchy red. Brought, together with the following species, by Mr. Burke from the hilly country in Africa, lying between 25 and 26 degrees South Lat., and 27 and 28 degrees Long. East.

Species VI.—*Heterorhina flavipennis*, Westwood. (Plate 45, fig. 5.) Nigra nitida, elytris pallide flavis, capite ♂ antice bicornuto. ♂ Long. corp. lin. 9.
Inhabits the south-eastern part of Africa. In the collection of A. Melly, Esq.

Closely allied to the preceding species, but narrower. Black, shining, slightly punctured, especially at the sides and hind part of the pronotum. Elytra pale yellow with two small dark humeral spots, and with several rows of slight longitudinal punctate striæ. The horns of the head are similarly formed to those of H. Algoensis. The fore tibiæ of the males are simple, and the hind ones less strongly toothed in the centre. Beneath entirely black and shining; the sides of the metasternum punctured.

Species VII.—*Heterorhina Feisthamellii*, Gory and Perchéron, Mon. pl. 19, fig. 5.

Messrs. Gory and Perchéron give Senegal as the habitat of this species, which seems from their figure to approach H. viridi-cyanea as figured by Palisot de Beauvais. Burmeister, however, who examined the insect in Paris, gives it as a probable variety of the Indian C. elegans (Handb. d. Ent. 3, 228).

There still remain two species of this group of whose true locality there appears to be some doubt, namely:—

Species VIII.—*Heterorhina Chloris*, Hope, Gory and Perch. Mon. pl. 20, f. 5.

The typical female specimen in Mr. Hope's collection is labelled "Brazil," but which (notwithstanding Burmeister gives it as a variety of the Indian H. elegans, Hand. d. Ent. 3, 228), I apprehend is an African insect, differing from H. Africana ♀ in not having the head cornuted above, and in having shorter and thicker tibiæ and tarsi; whilst as compared with the females of the H. elegans it is more elongated, and the tibiæ are less strongly bidentate.

Species IX.—*Heterorhina Smaragdina*, Hope, Gory and Perch. Mon. pl. 20, fig. 1, (but not of Herbst., &c.) See page 137.

ANISORRHINA, *Westwood.*

See p. 126. (*Genyodonta*, Burm. H. d. E. 3, 234.)

Species I.—*Anisorrhina bimaculata*, De Geer, Olivier, 1, 6, 14, pl. 7, fig. 52 ♂; pl. 2, fig. 6 ♀. Herbst. Icon., tab. 27, fig. 5.

Syn.—*Cetonia flavo maculata*, Fabricius, Gory and Perch., Mon. pl. 21, fig. 3 ♀. MacLeay, Burmeister.

Scarabæus bisignatus, Herbst., col. 3, p. 164.

The male has the head armed with a short flat horn on the vertex, and the front of the clypeus has the centre recurved and more or less emarginate. In both sexes the inner lobe of the maxillæ is armed with a strong curved hook at the apex, and the outer lobe is broad and entire.

Species II.—*Anisorrhina umbonata*, Gory and Percheron; Mon. pl. 22, fig. 1 ♂. MacLeay, Burmeistor.

The head is simple and unarmed in both sexes of this species. The maxillæ are alike in both sexes, with the apical lobe strongly bidentate, and the basal lobe terminated by an acute point. The male has no depression along the under side of the abdomen, and the clava of the antennæ is larger in this sex than in the female.

Mr. MacLeay has given the Cetonia propinqua of Hope, Gory and Percheron, Mon. pl. 51, fig. 3, as the female of this species, although these authors state Mexico as the habitat of the last-named insect. I have now before me Mr. Hope's typical specimen of C. propinqua (labelled as all the individuals in his collection, which have served for the descriptions of the various new species described therefrom are, with red paper-tickets *), and find it to belong to a different sub-family of Cetoniidæ, although having a very great *general* resemblance to H. umbonata. It is a male with the abdomen slightly channelled beneath, and with tridentate anterior tibiæ; the two terminal teeth being very close together.

Species III.—*Anisorrhina trivittata*. (Plate 46, fig. 3 ♂.) Rubro-fusca, pronoto vittis tribus nigris, elytris macula magna sinuata flava nigro-cincta.

Syn.—*Gnathocera* 3-*vittata*, Schaum, Anal. Ent., p. 41. Burmeistor Handb. d. Ent. 3, p. 236.

This new and hitherto unfigured species inhabits Caffraria and Port Natal. In its colours and markings it approaches nearest the first species, but differs from it as well as from umbonata in structural characters. I have only seen a male in Mr. Hope's collection, from which the accompanying figure is taken. It has the legs short and thick. The head is unarmed with the clypeus somewhat emarginate. The maxillæ have both the lobes simple and obtuse (pl. 46, fig. 3 *a*). The sternal process is very much curved upwards at the tip (fig. 3 *b*), and the abdomen is not channelled beneath.

Species IV.—*Anisorrhina bicolor*. (Pl. 46, fig. 5 ♀.) "Nigra nitidissima, elytrorum basi rubra, ♀."

Syn.—*Genyodonta bicolor*, Burmeistor, Handb. d. Ent. 3, 238.

This curious species is a native of South Africa (Enon), and is unique in the collection of M. C. Sommer, Esq. of Altona, to whose kindness in forwarding the insect for my examination I am greatly indebted. It is of a narrower and more elongated form than the other species, with the head unarmed; and the fore margin of the clypeus slightly emarginate. The maxillæ have the inner lobe simple, and the apical lobe short and thick (fig. 5 *a*). The mentum is deeply emarginate in front (fig. 5 *b*). The scutellum is long and narrow-triangular, and the sternal process is very short and thick (figs. 5 *c* and 5 *d*).

Species V.—*Anisorrhina Natalensis*, Hope. (Plate 46, fig. 4 ♂). "Smaragdina, capite fere quadrato marginibus elevatis nigris, thorace viridi varioloso, elytris viridi-opalinis, crebrissime punctulatis, podice postice aureo; tarsis piceis."

Syn.—*Gnathocera Natalensis*, Hope in Proc. Ent. Soc., p. 33.

This new and hitherto unfigured species inhabits Port Natal in South Africa, and is unique in the collection of the Rev. F. W. Hope, to whom I am indebted for an opportunity of illustrating it. The specimen is a male. The fore margin of the clypeus is slightly emarginate. The maxillæ have both lobes simple (fig. 4 *a*). The mentum is very deeply incised in front (fig. 4 *b*). The legs are rather long and slender, with the fore tibiæ simple. The sternal process is short, broad and rounded in front (figs. 4 *c*, 4 *d*). The abdomen is deeply channelled; and the elytra have no sutural spines at the extremity.

Cetonia recurva, Fabricius, Syst. Eleuth. 2, 138, is too concisely described to be accurately determined, although from the characters "tota ænea, sterno magno porrecto, cornuto recurvo," it appears to enter the genus Plæsiorrhina, if indeed it be not identical with P. depressa. It is a native of Guinea.

* The idea of thus, or in some other manner, indicating the *type* specimens in collections, is a most excellent one, and ought to be adopted, especially in all public collections.

CETONIA NITIDULA, Fabr., Ent. Syst. 1, 2, 146, is another African species which cannot be determined from the concise description of Fabricius. The emarginate clypeus, however, and the elytra acuminated at the apex, &c. seem to refer it to the genus Dymusia. It was described from the collection of Mr. Lee. Mr. Hope (Col. Man. 1, 38) refers it to the genus Cetonia without any expression of doubt.

INCA LINEOLA, Westwood. (Pate 46, fig. 6.)

Although the genus Inca has, as it appears to me, been satisfactorily proved to belong to the Trichiideous and not to the Goliathideous Cetoniidæ, I cannot resist the opportunity of figuring a species recently received by the British Museum from Sierra Leone, where it was collected by the Rev. D. Morgan; all the other known species of the genus being natives of South America. Various instances have been recorded of equally strong peculiarities, in the Entomo-geographical distribution of the species of different groups; as, for example, in a species of Cerapterus, brought from Brazil by Mr. Miers; all the other Paussidæ being natives of the old world.

I. nigra, capite et pronoto fulvo, varioloso, hoc tuberculis nigris, elytris albido grisco nigroque variis, alboque guttatis, singulo ultra medium et versus suturam lineola nigra ornato. Long. corp. lin. 10. Habitat Sierram Leonam, Rev. D. Morgan. In Mus. Britan.

The head and pronotum are black, the latter especially, covered with large fulvous punctures, except in various parts which form small, round, and oblique black, raised, shining tubercles. The head is unarmed and simple (fig. 6 *a*), the front margin of the clypeus being alone very slightly angulated in the middle. The maxillæ (fig. 6 *b*) are terminated by a triangular densely hairy lobe. The mentum is deeply emarginate in front, and narrowed at the base (fig. 6 *c*). The sides of the prothorax are slightly serrated. The elytra are not sinuated at the humeral angles, nor are the epimera visible; the former are punctured, varied with pale gray, whitish, and black colours, each with four small white round spots, one near the suture in the middle, the other three towards the outer and apical margin. There is also a small black stripe running from the middle white spot parallel with the suture. The legs are black and punctured. The anterior femora have a very slight sinuation near the tip within. The tibiæ are straight and destitute of a spine on the inside, but 3-dentate on the outside. The four posterior tibiæ have a slight indication of a spine beyond the middle. The sternal process is simple. The body beneath is covered with pale fulvous pile, except in the middle of the metasternum. The abdomen, except at the sides, is also luteous. I presume from the straight middle tibiæ, and the rather broad fore ones, that the unique specimen is a female.

I have now brought my revision of the whole of the Goliathideous Cetoniidæ to a close. My object in illustrating this tribe of insects has been twofold; first, to present a series of figures of the many new and rare species of these insects, which, both from their singular forms and beautiful colours, are pre-eminently favourites

with the Entomologist; and second, to obtain, by the very minute analysis to which the species have been subjected, a clew to their natural classification. Naturalists are aware that another tribe of Lamellicorn beetles (namely, the family of the Sacred Scarabæi) was, twenty-four years ago, investigated by Mr. MacLeay with great care, the result whereof led him to propose a quinarian and circular distribution of the species, which he afterwards extended to the whole of the animal kingdom; and as no subsequent author has revised his arrangement of the Scarabæi, it has been repeatedly held up as an unanswerable proof of the truth of the quinarian system. Five years ago, Mr. MacLeay published his Quinarian Revision of the Cetoniidæ, since which period I have neglected no opportunity of analysing the species of one of the tribes of that family. The result is now before the entomological world, and I feel convinced that no one, after a careful examination of my figures and dissections, can arrive at any other conclusion than that these insects can neither be arranged in a quinarian nor in a circular system. I do not mean hereby to assert that such a system is totally unnatural, but simply that Mr. MacLeay has entirely failed in his endeavour to carry out such a system amongst the Goliathideous Cetoniidæ.

The plant figured in plate 45, is the South-African Ixia monadelpha.

PLATES XLVII. AND XLVIII.

ILLUSTRATIONS OF TWO NEW AFRICAN SPECIES OF PAPILIO.

Since my Memoir on the African Species of the Genus Papilio of Modern Authors was published (Plates 37—40), Mr. Edward Doubleday has been so kind as to place in my hands two additional undescribed species, received by his brother, Mr. H. Doubleday, from Mr. Raddon, who obtained them from the Gold Coast. It is with great pleasure, therefore, that I introduce them into the present volume by way of Supplement to my Memoir.

PAPILIO CHAROPUS. (Plate 47.)

P. alis nigris, fasciâ communi læte viridi, in posticis dilatata et extus denticulata, versus costam anticarum in maculas divisa, alis posticis caudatis maculisque submarginalibus viridibus, alis subtus fuscis, anticis fascia submarginali lutea versus costam bifida, posticis nebulis ocellisque submarginalibus griseo argenteoque variis. Expans alar. unc. 4¾.

Inhabits the Gold Coast of Africa. In Mus. H. Doubleday.

This species is closely allied to Papilio Nireus, and still nearer to the Madagascar P. Oribazus of Boisduval, with which last it might be at first confounded. Having however, whilst in Paris last summer, made drawings of the last-named species and its allies Phorbanta, Epiphorbas, disparilis, &c. (with a view to their publication in this work), I am enabled to state its specific distinction from all of them. The beautiful green bar which crosses the wings is much narrower in the fore wings, and much broader in the hind ones, than in P. Oribazus (which is similarly tailed); whilst the underside of this species is quite different, being in fact far more beautiful in its cloudings and silvery ocelli than in any of the allied insects.

PAPILIO HESPERUS. (Plate 48.)

P. alis nigris, fascia communi curvata, macula obliqua versus medium costæ anticarum maculisque duabus discoidalibus posticarum sulphureis, his caudatis. Expans. alar. unc. 5½.

Inhabits the Gold Coast of Africa. In Mus. H. Doubleday.

The fore wings of this very distinct species are of a velvety black colour, with an oblique brimstone spot at the extremity of the discoidal cell, divided into three parts by the veins, a small oval subapical spot and a curved fascia extending half across the fore wings and nearly across the hind ones, being broadest in the space

between the first two branches of the great median vein of the fore wings; the hind wings have also a spot near the costal margin, and two patches on the disc beyond the middle. On the underside, the wings are brown, shaded along the apex and hind margins with paler purplish and brownish clouds; the various pale markings are here only partially apparent, the bar across the hind wings being much narrowed, and the discoidal spots on these wings as well as the subapical dot of the fore wings being obsolete. The neck is marked with four minute white spots.

The plant figured in plate 48, is the Clerodendron splendens (*G. Don*), a native of Tropical Africa.

" ——————— The fall of kings,
The rage of nations, and the crush of states,
Move not the man, who, from the world escaped,
In still retreats and flowery solitudes,
To Nature's voice attends, from month to month
And day to day, through the revolving year;
Admiring sees her in her every shape,
Feels all the sweet emotions at his heart,
Takes what she liberal gives, nor thinks of more."

THOMSON.

ADDENDA ET CORRIGENDA.

Page 2, line 18, and page 6, line 35, for "Eudacilla," *read* Eudicella.

Page 6, line 28, for "genera," *read* sub-genera.

—— foot note *. Mr. Strahan's insect is the *micans* of Gory, but not of Drury. *See* page 172.

Page 8, I now possess an additional species of *Phyllomorpha*, intermediate between *P. Latreillii* and *P. Persica*, which may be thus charactorised.

PHYLLOMORPHA PELLICULA, W. Albida; pronoto postice haud profunde inciso, lateribus in lobos duos lateralitor extensos productis, abdominis lati laciniis penultimis et antepen. maximis æqualibus apice recte truncatis. Long. corp. lin. 5. Habitat in Africâ tropicali.

The plant figured in plate 2 is *Lobelia ramosa* Benth., from the Swan River, given by mistake for *L. gracilis*, which inhabits the Cape of Good Hope.

Page 12, *Systella Rafflesii*, W. Plate 4, fig. 1, 2.
Systella Hopii, W. Plate 4, fig. 3.

Page 14, The idea of the publication of an English Encyclopædia of Natural History has, I believe, been abandoned.

Page 17, *Epicopeia*. I have recently examined a female of this genus, which possesses *setaceous* antennæ: thus corroborating its affinity with *Gymnautocera*, &c.

Page 19, *Eterusia bicolor*, Hope, is most probably a variety of *Papilio Ædea*, Clerck. Icon. t. 41, fig. 3–4.

Page 24, The genus *Dictynna* may be identical with *Eurys*, Newman, who however gives no description of the peculiar veining of the hind wings. *Entom.* p. 90. *D. lata* is distinct from *E. æratus*.

Page 33, M. De Haan, in the Verhandl. o. d. Natuurl., &c., Orthopt. 1842, has figured *Deroplatys desiccata* ♀ and *D. arida* ♂ (*M. palleata*, Hag. MSS.), as the sexes of one species.

He has also figured, under the name of *D. rhombica*, Hag. MSS., a male insect, which appears to be identical with my *D. angustata*, and giving, as the female, the *D. lobata* of Guerin.

Page 40, line 2, *Cantharocnemis Spondyloides*, Serv. Ann. Soc. Ent. France, 1, 133.

Page 43, The Count de Castelnau informs me that some of the insects figured in this plate had been previously described in his Histoire Naturelle des Animaux articulés.

Page 52, line 29, *Dele* nostr.
line 31, *read* triangulari *utrinque* ad, &c.

Page 53, *Midas bicolor*. Plate 14, fig. 4.

Page 57, for "*Colobothea leucospilota*," read *C. albo-notata*. See p. 112.

Page 58, *Urocalymma*. Mr. Newman has described several additional species of this genus from the British Museum collection, unnecessarily changing its name to *Homonœa*. Entom., p. 320.

Page 60, line 25, for "greator," *read* greatest.

Page 65, *Opsomala gladiator*. I now possess this singular insect from Tropical Africa.

Page 67, *Papilio Pelaus* is identical with *P. Imerius* of Godart (Enc. Méth.) and Boisduval, and *P. Augias* of Monotrios. It is a native of Haiti. *See also* p. 107.

Page 70, note †. The removal of *Inca* to the Trichiideous group of *Cetoniidæ* should also have been noticed.

Page 71, *Tmesorrhina amabilis* = *Cetonia Iris*, F. *Vide* p. 107.

Page 72, *Tm. similima*. Now removed to a new genus, *Aphelorhina*. *Vide* p. 108 and 181.

Page 79, *Ænictus certus*, Plate 20, fig. 5. W. W. Saunders, Esq. has received a species of this genus from Southern Africa, which I have described in a paper recently read before the Entomological Society.

Page 81, *See* p. 157 and *seq.* for additional species of Australian *Scaritidæ*, to which may be added the following species, which is intermediate between *C. Bonellii* and *C. tinctillatum*, thus confirming the propriety of my rejection of Eutoma:—

Carenum Scaritoides, W. Nigrum nitidum subangustum, elytris violaceo tenuissime marginatis, punctis duobus humeralibus alterisque duobus subapicalibus, pronoto linea tenui centrali impresso, tibiis anticis externe bidentatis. Long. corp. lin. 9½ (mens. angl.). Lat. elytr. fere lin. 3. Habitat Port Philip, West Australia. In Mus. D. Hope.

Page 91, Plate XXIV.

Page 93, Entomol. Intell., (No. VI.).

Page 103, *Schizorhina obliquata* is synonymous with the subsequently published *Diaphonia euonemis* of Burmeister.

Page 104, *Macronota Rafflesiana* = *Tæniodera histrio*, Burm.
Macronota tristis is probably the female of *Chalcothea Barrotiana*, Burm.
Macronota Vittigera, Hope, is described by Burmeister as the variety *a* of *Clerota Budda*.

Page 118, *Rhomborhina opalina*. Some of the specimens of this species received by Captain Parry from India differ in the colour of the scutellum, and have been considered by that gentleman as distinct, under the name of *Rh. intermedia*.

—— *Rhomborhina Japonica*. Dr. Burmeister (p. 779) considers this species as identical with *Rh. opalina*, in which, however, he is certainly mistaken, since the two insects are *structurally* distinct. His strictures on the breadth of my figure of *Rh. Japonica* and the width of its feet, are contradicted by my short description of that species derived from Mr. Hope's typical specimen. The sternal process of Rh. Japonica is scarcely more than half of that of *Rh. opalina*.

Page 119, Dr. Burmeister considers *Rhomborhina microcephala* (the specific name of which he has unnecessarily altered to *An. Mearesii*) as well as *Heterorhina glaberrima*, as belonging to the genus *Anomalocera*, which does not accord with my views of the relations of these insects.

—— *Rhomborhina clypeata*. (Plate 34, fig. 3).

Page 120, *Rhomborhina pilipes*. Melly's MSS. (Burm., p. 779.) Mr. Melly having been so good as to send me the unique specimen in his collection thus named, I find it agrees with the insect named by Mr. Hope *Rh. distinota*, and, which, as stated in p. 118, appears to me only a variety of *Rh. Mellii*, agreeing therewith in antennæ, sternal process, metasternal carina, black extremity of abdomen, black hairs on the tibiæ, form of clypeus, &c. Dr. Burmeister (p. 780) has incorrectly considered *Rh. apicalis* as a variety of *Rh. pilipes*.

—— Mr. Hope has recently received a very distinct species of *Rhomborhina* from India, allied to, but larger than, *Rh. Mellii*.

Page 122, *Trigonophorus Dalessertii*. (Plate 29, fig. 4).

—— Mr. Hope has recently received another species of *Trigonophorus* from India, allied to *Tr. Saundersii*.

Page 126, line 6 and 7, for "Plæsiorrhina," *read* Bothrorrhina.

—— Note *, *Anisorrhina* is synonymous with the subsequently published genus *Genyodonta*, Burm.

Page 127, *Schizorhina Guerinii* belongs to the genus *Stenotarsia*, Burm., and is allied to *St. coccinea*.

—— *Schizorhina plumigera* is the *Pogonotarsus plumiger*, Burm.

Page 128, *Chromoptilia diversipes* is identical with the subsequently published *Trichotarsia fimbriata*, Burm., p. 587.

Page 134, *Heterorhina dives* is the *Mystrocoros* or *Diceros Diardi*, Burm.

Page 136, *Heterorhina tibialis*. Dr. Burmeister (p. 787 and 789) thinks that this very distinct species is a variety of *H. Hopei*. My figures of the armature of the clypeus and sternal process of the two species will sufficiently prove their distinction.

Page 137, *Heterorhina jucunda* (*smaragdina*, Gory and Perchéron), judging from Mr. Hope's typical specimen, is certainly quite a different species from *H. punctatissima*, although Dr. Burmeister considers the contrary to be the case (p. 788).

—— Dr. Burmeister having commented upon my figures of the maxillæ of the various species of this genus, I will only observe that they were all made with the express desire of determining the form of that organ, and that if the specimens examined by Dr. Burmeister do not precisely agree with my figures, I am of opinion that it has resulted from the specimens varying in this respect from each other.

Page 153, *Papilio Trophonius*, as stated to me by Mr. E. Doubleday, is identical with the *Danais Rechila* of Godart. Enc. Méth.

Page 173, line 14, add "pronoto" after "clypeo porrecto."

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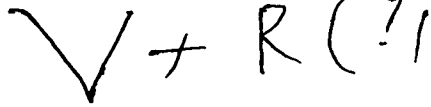

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